PLAN OF OPERATION

Hansen Quarry
California Mine ID #91-12-0028
(Updated 3/4/2025)

Introduction

The project is continued extraction, crushing, and stockpiling of rock from the Hansen quarry for County road maintenance and repair projects in the area. This permit application proposes continued extraction of up to 25,000 cubic yards (cy) as frequently as annually over the next 15 years. The total volume extracted will not exceed 40,370 cy.

Location

The Hansen quarry is located 6.2 miles north of Bridgeville on Kneeland Road (Attachment 5). It is in Section 22, Township 2 North, Range 3 East, HB&M and can be seen on the Yager Junction 7.5' USGS quadrangle map. The quarry is located on Assessor Parcel #207-036-01.

Past Mining Activities

The surface mining permit issued in 1994 (Permit #CUP-03-93/SMP-03-93) approved the mining of rock from a previously existing rock quarry from 1994 to 2009. HCPW proposed to mine and crush 25,000 cy every three to five years. The volume of rock available in the quarry was estimated to be approximately 82,700 cy. Seven individual extractions worked into the face, removing a total of 42,330 cy of rock. The permit was renewed in 2009 for 25,000 cy as frequently as annually, not exceeding 40,370 cy in total, over the following 15 years. Since the permit renewal in 2009 no extraction has been performed.

Table 1 – Production

YEAR	VOLUME
1996	850 cy
1997	14,120 cy
2001	23,060 cy
2002	500 cy
2003	800 cy
2004	600 cy
2005	No production
2006	No production
2007	No production
2008	2,400 cy
TOTAL	**42,330 cy**

Crushing occurred during at least some of these extractions. The crushed rock was stockpiled on the quarry floor in two locations, on the north side where the access road enters the quarry, and in the southwest corner, at the end of the quarry face.

At this time the quarry face is approximately 300 ft long x 50 ft high with a lower face about 25 ft high. There is a 25 ft wide ramp that serves as a catch bench at the top of the lower face. The upper face is set back from the lower face by the ramp/bench and is also about 25 ft in height.

Proposed Mining Activities

HCPW proposes extraction of up to 25,000 cy of rock, as frequently as annually, for the next 15 years. The total volume extracted will not exceed 40,370 cy. Crushing and stockpiling are included in the proposed activities.

Rock Extraction

The mining method to be used will be consistent with how HCPW has conducted mining activities over the past 30 years (1994 and 2009 permit periods). Extraction will be accomplished by ripping and breaking up the rock with a bulldozer or excavator. The rock will be pushed into temporary stockpiles on the quarry floor for crushing. In the event localized hard rock is encountered, small-scale separation with charges may be performed. Rock extraction will work into the face by about 72 ft. Quarry face (high-wall) stability will be ensured by excavating the upper face into the hillside and maintaining a 25 ft wide catch bench at 25 ft up from the quarry floor. The horizontal alignment of the face will remain about the same.

Mining and crushing will be done during daylight hours (sunrise to sunset), primarily on weekdays. The average time period from extraction to stockpiling will be about six weeks. Dust control measures will consist of watering the quarry entrance, access road, and quarry floor as needed with a water truck using an offsite water source.

Rock Processing

A portable crusher assembly, consisting of jaw and cone crushers, conveyors, and a generator trailer will be temporarily located on the quarry floor. Rock from the temporary stockpiles will be transported to the crusher via front-end loader. Crushed rock will then be transferred to the permanent stockpiles. Once crushing activities are completed, the crusher assembly will be dismantled and removed from the area.

Traffic Control

Traffic control will consist of placing warning signs along Kneeland Road in both directions on either side of the quarry area. It will not be necessary to detour or otherwise restrict traffic. Minor traffic delays may occur as vehicles slow down when they encounter trucks entering or exiting Kneeland Road from the quarry. Delays will be temporary, ending when extraction and processing activities are completed and trucks/equipment leave the area.

General Extraction Details

Following each extraction, the quarry face will be left with a slope of varying steepness, in some places greater than 1:1 (where there are hard rock outcrops). The catch bench will be maintained at approximately 25 vertical feet. The floor will be regraded flat as necessary, with a depression located in the center where rainfall runoff from the face and floor will accumulate and evaporate or percolate into the ground. Containment berms will be repaired or reconstructed as necessary to keep runoff from leaving the site and draining into the unnamed tributary to Grizzly Creek, ~500 ft below the site. These berms will be revegetated as needed using fast-growing native grass seed and mulched.

Reclamation

Final Reclamation

No reclamation has been undertaken for the site. Final reclamation will be undertaken when mining is complete or the permit has expired. The amended Reclamation Plan calls for regrading the quarry face to a 1:1 slope with a catch bench at 25 vertical feet. The catch bench will be soiled and vegetated with native grasses. Additional reclamation activities may include removing the stockpiles, removing the containment berms, regrading and decompacting, topsoiling and revegetating the quarry floor, and decommissioning the existing access road. Final site end use and reclamation activities will be coordinated with the property owner. There is the possibility that the site will continue to be used for material stockpiling and equipment storage/staging after mining activities are complete. The Reclamation Plan may be modified and submitted for re-approval when the date of final mining activities is known.

Monitoring and Reporting Activities

Monitoring will consist of regular visual inspections of the quarry by HCPW personnel for slope stability, drainage, and berm integrity. The quarry will also be inspected annually by Humboldt County Planning Division staff. Reporting will consist of annual reports to the local lead agency and CA Department of Conservation as required by the Surface Mining and Reclamation Act.

Financial Assurance

The current financial assurance is included as an attachment to the permit renewal packet. No other changes to these amounts are proposed as no changes to the approved Reclamation Plan are proposed.

FINAL RECLAMATION PLAN

HANSEN QUARRY
(Humboldt County)
August 2009

Amended March 2010

Prepared by:

Humboldt County Department of Public Works
Natural Resources Division
1106 Second Street
Eureka, CA 95501
(707) 445-7741

TABLE OF CONTENTS

OPERATOR

Humboldt County Department of Public Works (HCPW)
1106 Second Street
Eureka, CA 95501

OWNER/SURFACE RIGHTS

Hansen-Degnan Properties
615 Main St.
Sausalito, CA 94965

GENERAL MINING OPERATION INFORMATION

Mined Mineral Commodity

Gravel

Estimated Total Production

Mining may consist of extractions as large as 25,000 yd^3, or smaller extractions as frequently as annually, totaling 40,370 yd^3 over 15 years.

Total Acres to be Disturbed

4.0 acres

Total Acres to be Reclaimed

4.0 acres

Maximum Anticipated Depth of Mining

90 feet (ft)

Date of Start Up

In use since at least 1976

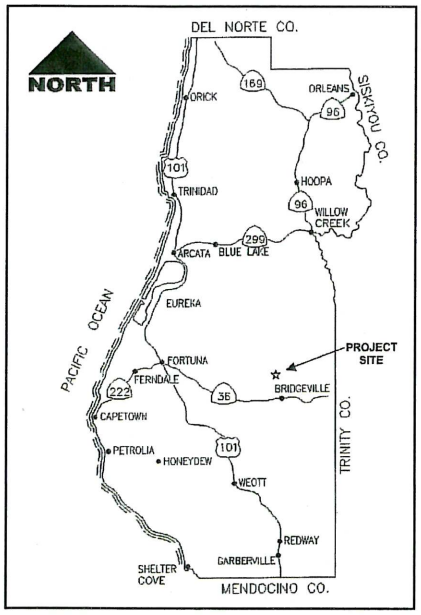
Estimated Proposed Date of Closure

~~2024~~ 2040

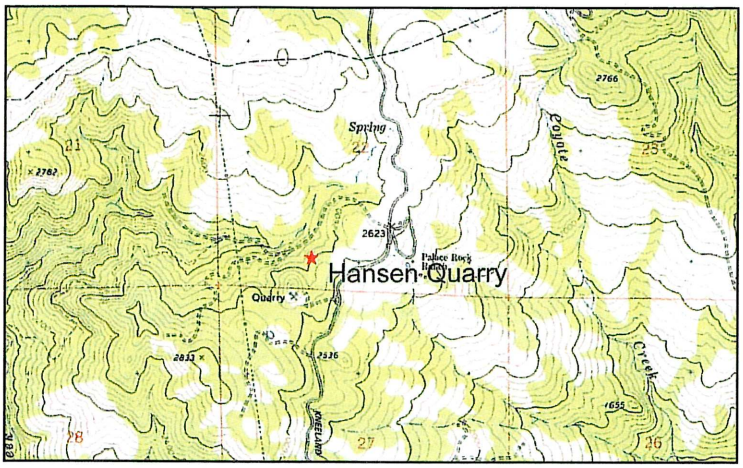
LOCATION

The Hansen Quarry is located 6.2 miles north of Bridgeville on Kneeland Road. It is in Section 22, Township 2 North, Range 3 East, HB&M and can be seen on the Yager Junction 7.5' USGS quadrangle map. The quarry is located within Assessor Parcel #207-036-01. See Attachments 1, 2, 3A, and 3B.

Location Map



Vicinity Map



SITE DESCRIPTION

The Hansen Quarry lies at an elevation of approximately 2,600 ft. near the top of a north facing ridgeline within the Van Duzen River watershed. The site faces the west in an area of moderately steep, rolling terrain with good drainage and a mix of open prairie and oak-fir forest. This is an upland site with no water resources associated with the quarry.

Looking West from Top of Quarry Face (2009)

The pit was developed from a naturally occurring 90-ft high outcropping of rock. Operations from 1976 to 1993 removed approximately half of the original outcropping, creating the quarry face and floor. Currently the quarry face is approximately 300 ft long x 90 ft high with a lower face about 25 ft high. There is a 15 ft wide ramp that serves as a catch bench at the top of the lower face. The upper face is set back from the lower face by the catch bench and is about 65 ft in height. The quarry floor is about 1.3 acres in area, and the combined area of gravel stockpiles is about 0.7 acre.

Looking Northwest at Quarry Face (2009)

DESCRIPTION OF ENVIRONMENTAL SETTING

Aesthetics

The quarry is located on the northwest side of a hill and is not visible from Kneeland Road (on the backside of the hill). There are no residences or other structures visible from the quarry floor or catch bench.

Entrance to Quarry on Kneeland Road (2009)

Air Quality & Naturally Occurring Asbestos

In 2002 the California Air Resources Board approved an Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations (Final Regulation Order Section 93105). The Hansen Quarry is not located in an ultramafic rock unit and does not appear to contain asbestos, serpentine, or ultramafic rock. If in the event naturally occurring asbestos (NOA) is discovered at the site, the North Coast Unified Air Quality Management District will be notified/consulted immediately. Stringent dust control measures will be applied during quarrying, processing/sorting, and stockpiling operations and during activities associated with final reclamation. If NOA is left exposed it will be encapsulated by re-soiling during final reclamation.

The North Coast Unified Air Quality Management District is in non-attainment for Particulate Matter smaller than 10 microns in diameter (PM10) according to State of California Standards. Sources of PM10 in the project vicinity are from road and natural airborne dust, vehicle emissions, and occasionally forest fires.

Biological Resources – Vegetation

There are no species of plants listed by the US Fish & Wildlife Service (USFWS) as threatened or endangered in the Yager Junction 7.5' quadrangle. The California Natural Diversity Database (CNDDB) contains records for three sensitive plant species (ranked 2.2 and 1B.2 by the

California Native Plant Society) and one lichen species in the area covered by the Yager Junction quadrangle.

Rare/Sensitive Plant/Lichen Species
(Habitat in Project Area/Vicinity)

SCIENTIFIC NAME	COMMON NAME	LISTING STATUS	CNPS RANK
Erythronium revolutum	coast fawn lily	Fed: None Cal: None	2.2
Sidalcea Malviflora ssp. patula	Siskiyou checkerbloom	Fed: None Cal: None	1B.2 (Fairly threatened in CA)
Usnea longissima	long-beard lichen	Fed: None Cal: None	N/A

(1B.2 = Rare, Threatened or Endangered in California and Elsewhere)
(2.X = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere)

Coast Fawn Lily – Coast fawn lily can be found in bogs and fens, broadleafed upland forest, and north coast coniferous forest. Coast fawn lily was documented in 2005 1.6 miles northwest of the quarry. The quarry does not contain habitat for coast fawn lily. However, there is habitat in the vicinity.

Siskiyou Checkerbloom – Siskiyou checkerbloom can be found in coastal prairies and upland forests, especially in disturbed areas. Siskiyou checkerbloom was documented in 2006 1.6 miles northwest of the quarry. Both the quarry and vicinity contain habitat for Siskiyou checkerbloom.

Long-Beard Lichen – Long-beard lichen can be found in north coast coniferous forest and broadleafed upland forest, on a variety of trees including big leaf maple, oaks, ash, Douglas fir, and bay. There are no documented occurrences of long-beard lichen in the quarry or vicinity. However, there is habitat for long-beard lichen in the vicinity of the quarry.

Biological Resources – Wildlife

The following species of wildlife are listed by USFWS as threatened or are candidates for listing for the Yager Junction 7.5' USGS quadrangle.

USFWS Species List for Yager Junction Quadrangle

SCIENTIFIC NAME	COMMON NAME	STATUS	CRITICAL HABITAT?
Fish			
Oncorhynchus kisutch	S. OR/N. CA coho salmon	Threatened (1997)	Yes (1999)
Oncorhynchus mykiss	Northern California steelhead	Threatened (2000)	Yes (2005)
Oncorhynchus tshawytscha	CA coastal chinook salmon	Threatened (1999)	Yes (2005)
Birds			

Brachyramphus marmoratus	marbled murrelet	Threatened (1992)	Yes (1996) Revision Proposed (2006)
Coccyzus americanus	western yellow-billed cuckoo	Candidate	No
Strix occidentalis caurina	northern spotted owl	Threatened (1990)	Yes (1992)
Mammals			
Martes pennanti	fisher, West Coast DPS	Candidate	No

There is no habitat for the listed fish species within the quarry (upland location).

Fisher – The quarry does not contain habitat for fishers, although there is fisher habitat in the vicinity of the quarry (undisturbed late-successional forest with rotting logs or tree cavities for nesting).

Western Yellow-Billed Cuckoo – There is no habitat for western yellow-billed cuckoos in the quarry or vicinity (dense willow and cottonwood stands on river floodplains).

Northern Spotted Owl – The quarry does not contain habitat for northern spotted owls. There is patchy and fragmented habitat in the vicinity (old-growth or mixed-age stands of mature and old-growth trees).

Marbled Murrelet – The quarry and vicinity do not contain habitat for marbled murrelets (old-growth forests with large trees and high canopy closure).

Review of occurrences of rare and sensitive wildlife species recorded in CNDDB (April 2009) for the Yager Junction 7.5' USGS quadrangle revealed two species of mammals.

Rare/Sensitive Wildlife Species
(Habitat in Project Area/Vicinity)

SCIENTIFIC NAME	COMMON NAME	LISTING STATUS
Arborimus pomo	Sonoma tree vole	Fed: None Cal: None
Martes americana humboldtensis	Humboldt marten	Fed: None Cal: None

Sonoma Tree Vole – There is no habitat for Sonoma tree vole in the quarry area. There is habitat in the quarry vicinity (old growth and large second growth forests of Douglas fir, redwood, and montaine hardwood-conifer).

Humboldt Marten – The quarry does not contain habitat for Humboldt marten. However, the quarry vicinity contains habitat (late-successional coniferous forests with low overhead cover).

Cultural Resources

There are no known or recorded archaeological or historical sites at the quarry or in the vicinity.

Geology

The quarry lies within a region of Franciscan sandstone made up chiefly of greywacke and interbedded siltstone with minor conglomerate. These deposits occur predominantly as massive sandstone beds with thin siltstone interbeds which form moderate to steep, straight to convex slopes, sharp ridge crests and v-shaped canyons with a dense, coniferous timber cover. Slopes are generally stable, but prone to debris sliding along steep riverbanks and in steep headwater drainages.

The quarry is located in Earthquake Ground Shaking Zone E, Bedrock. Characteristics of earthquake shaking are higher accelerations but of relatively short periods and shorter duration of shaking, and high slope instability. The Freshwater Fault is approximately four miles west of the quarry.

Soils

Soil in the vicinity of the quarry are of the Hugo series, characterized by having a depth of three to four feet, moderately rapid permeability with good drainage, and with moderate erosion hazard. These soils are rated as highly suitable for timber production and of medium to low suitability for range use. There is minimal topsoil in the quarry area.

Noise

Ambient noise levels in the quarry vicinity range from 30 to 65 dBA, and result from wind, birds, livestock, and vehicular traffic (Jake Brakes) on Kneeland Road. Noise contribution from quarry activities are in the low-80s dBA range, which is typical for this type of activity, with the loudest noise coming from equipment backup horns and the crusher.

GENERAL LEAD AGENCY INFORMATION

Lead Agency

Humboldt County Community Development Services Department, Planning Division

Staff Contact

Anita Punla, Senior Planner

Phone Number

(707) 445-7541

Address

3015 H Street
Eureka, CA 95501

Surface Mining/Conditional Use Permit Number

CUP-03-93X/SMP-03-93X

Date Issued

Pending

Expiration Date

Pending

Current FACE being processed by Lead Agency for 2025, included as an attachment

Financial Assurances

Financial Assurances 2009

ACTIVITY	COST ($)
Direct Costs	
Primary Reclamation Activities (74%) (grading, topsoiling)	5,811.41
Revegetation (13.1%) (native grasses, mulch)	1,028.78
Monitoring Costs (2.9%) (revegetation, 3 years)	227.74
Indirect Costs	
Contingencies (10%)	785.33
Lead Agency Administration Cost	1,000.00
Total Estimated Cost	**$8,853.26**

Approved June 2, 2009 (Humboldt County Board of Supervisors), updated annually

DESCRIPTION OF MINING ACTIVITIES

HCPW will mine up to 25,000 yd^3 of rock, as frequently as annually, over 15 years. The total volume extracted will not exceed 40,370 yd^3. Crushing and stockpiling are included in the mining activities.

Quarrying

The mining method proposed is identical in nature to operations conducted by HCPW over the past 15 years (1994 permit period). Extraction will occur by ripping and breaking up the rock with a bulldozer or excavator. The material will then be pushed into temporary surge piles for processing. In the event localized hard rock is encountered, small-scale separation with charges may be performed. The quarry face will be maintained at a minimum of 1:1 slope, with ~15 ft. wide bench located ~40 ft. above the quarry floor. The alignment of the quarry face will remain consistent.

Mining and crushing will occur during daylight hours (sunrise to sunset), primarily on weekdays. The average time period from extraction to stockpiling will be about 4-6 weeks.

Aggregate Processing

A portable crusher assembly, consisting of jaw and cone crushers, conveyors, and a generator trailer will be temporarily located on the quarry floor. Quarried rock will be transported to the crusher via front-end loader. Processed rock will be sorted and placed onsite in stockpiles and will later be utilized for road maintenance and winter storm damage repair projects. Once crushing activities are completed, the crusher assembly will be dismantled and removed from the area.

Crusher in Operation (Charles Bar 2008)

Dust Suppression

Wetting the quarry access road and quarry floor will occur during hours of operation to control fugitive dust and minimize wind erosion. Furthermore, a dust suppression system will be utilized during processing operations to further reduce fugitive dust. Offsite water is delivered to a large water storage tank via a water truck. Refilling is based on demand, typically every 2-3 days. An electric or portable gas-powered pump supplies water to strategically located misters, typically installed at the screen deck and conveyor head-pulleys. Misters may also be utilized on the cone and/or jaw, depending on the volume of dust generated by the material being processed.

Traffic Control

Traffic control will consist of placing warning signs along Kneeland Road in both directions from the quarry access road. It will not be necessary to detour or otherwise restrict traffic. Minor traffic delays may occur as vehicles slow down when they encounter trucks entering or exiting Kneeland Road from the quarry. Delays will be temporary, ending when extraction and processing activities are completed and trucks/equipment are removed from the area.

Fueling and Maintenance

All fueling, lubing, and equipment maintenance will be performed in a responsible manner. The designated staging/storage area for equipment, fuels, lubricants, and solvents related to quarrying activities will be restricted to a single location within the quarry site. Equipment will be inspected for leaks prior to starting each shift, following lunch breaks, and at end of shift each workday. Maintenance involving the removal/repair of hydraulic cylinders/hoses or of reservoirs containing hazardous products will be performed over impervious fabric resistant to Total Petroleum Hydrocarbons (TPH). A minimum of two sealed 5-gallon spill kits will be kept onsite

at all times during extraction/processing operations. One sealed 5-gallon spill kit will be kept onsite during off-haul activities from the stockpile area. All activities related to fueling, lubing, and maintenance will be performed in the designated staging area unless equipment has been immobilized due to a mechanical failure. In these instances, every effort will be made to guard against and control spills. The functional condition of fuel transfer pumps, hose assemblies, and emergency shutoff switches will be evaluated prior to usage. Personnel tasked with fueling will remain near the emergency shutoff switch during fueling operations. Topping off of fuel tanks will not occur. Fuels and lubricants will not be stored onsite after-hours or on weekends.

Either an electric or gasoline powered water pump may be used to supply water to the crushing equipment, dust suppression system. When a gasoline powered water pump is utilized, it will be situated over a drip pan or impervious fabric resistant to TPH and will be securely stored or removed from the site at end of shift each workday.

Hazardous Material Management

If leaks or spills occur in the area of operation during any extraction, processing, or stockpiling operations, they will be controlled immediately. All contaminated soil will be recovered from the site and stored in DOT approved containment vessels. All stored contaminated/hazardous material will be removed in a timely manner and disposed of at an approved disposal facility.

Annual Winterization Activities

Each fall prior to the commencement of winter rains, the quarry floor will be finish graded to control stormwater and divert it towards the center of the site. A saturation trench will be constructed at the toe of the quarry face to facilitate percolation and/or evaporate of onsite stormwater. Furthermore, each end of the trench will be finish graded to a 10:1 slope to create escape routes for animals that may become trapped. If the existing stormwater containment berm around the exterior of the site has been damaged or breeched during extraction or end-haul activities, it will be reconstructed as necessary to control stormwater runoff prior to the commencement of winter rains. Any rebuilt sections of the berm will be straw mulched to reduce offsite, sediment transport of fines associated with the activity. Stormwater control measures will be adequate to contain stormwater onsite during a 20-year/l hour intensity/magnitude storm event. Stormwater discharging from the site would be to an unknown tributary leading to Grizzly Creek ~0.5 mile downstream of the site.

Interim Management Plan

An Interim Management Plan will be filed if and when the site is in idle status.

Monitoring and Reporting

Monitoring consists of regular site inspections of the quarry by HCPW personnel for slope stability, stormwater management, berm integrity, and maintenance of the access road. Humboldt County Planning Division staff also inspects the quarry annually. Reporting consists of annual reports to the local lead agency and CA Department of Conservation as required by SMARA.

INTERIM AND FINAL RECLAMATION

As of spring, 2010, no reclamation has been undertaken due to the diminutive size of the site and the frequency of excavation and end-haul events. As quarrying has advanced into the hill and the

processing/stockpiling area has subsequently been expanded, preliminary reclamation specific to the south end of the site will begin in the near future (see Attachment 4). HCPW intends to begin utilizing stored (existing) processed material previously placed within a Class III watercourse at the south end of the site. Initially, the primary focus is to remove material from both the east and west ends of the stockpile. Once those areas have been cleared, it will allow access for the removal of material within the watercourse. Removal of material from this area will occur over the course of several years as demand for material dictates. Once removed, and the area is finish graded, HCPW will construct, vegetate, and maintain an earthen berm adjacent to the watercourse to protect against offsite stormwater and sediment discharge and to protect the rehabilitated area from further encroachment and disturbance. Restoration of the disturbed area will include revegetating with conifer and/or native grasses as deemed appropriate by the landowner. Revegetation will be performed under direct supervision of a certified botanist. See Reclamation Activities, Revegetation, Pg. 15 for specifics regarding revegetation.

Further interim and final reclamation will take place as mining operations progress towards conclusion.

Post Reclamation Land Use

Parcel (#207-036-01) is zoned Agriculture Exclusive, Timber Production Zone, with a Humboldt County General Plan land use designation of Agricultural grazing. The property owner, when consulted regarding post reclamation land use, indicated that he intends to continue utilizing all or a portion of the site as a "borrow pit" for logging and ranch related activities and will continue to store aggregate and equipment at the site once HCPW operations are complete. Continued use of the site as a borrow pit is a compatible use on land zoned for timber production. Therefore, the anticipated post reclamation land use is capricious at best and may include mining, forestry/logging, and livestock grazing. The reclamation plan is written with the intention of reclaiming the site to simulate productivity to the surrounding area to the furthest extent possible.

Public safety will not be compromised by interim reclamation of this site. The site is not located on public land and public access is blocked. Measures to protect water quality and ensure slope stability are included in the reclamation activities.

Reclamation Activities

Reclamation activities will consist of the following:

1. Development of Final Engineered Site Design/Plans.
2. Finished Grading.
3. Resoiling.
4. Revegetation.
5. Monitoring and Maintenance.
6. Post-Reclamation Monitoring

1 – Final Engineered Site Design/Plan: A licensed land surveyor will perform a topographical survey of the site approximately 14-16 months prior to closure. The survey data will then be provided to the engineer to assist in developing final site design criteria and plans. HCPW will provide OMR final design plans for review and approval no less than one year prior to closure and initiation of reclamation activities. Furthermore, to assist in determining final slope design of the quarry face, a licensed geologist may be retained to perform a geologic survey of the site and provide a geotechnical report to the engineer if deemed necessary to achieve a stability factor of

safety that is suitable for the proposed end use(s). Implementation of the plan will occur only upon approval by OMR. See Attachments 5 & 6, Proposed Final Reclamation Site Plan and Cross-Section drawing.

2 – Finished Grading: The quarry face, which will be approximately 90 ft high at end-of-project, will be finish graded to a 1:1 slope or as determined appropriate by the engineer, with a 15-ft wide bench located 40 ft above the quarry floor. Due to the height of the face, an engineered plan of the final slope will be developed and submitted for review to OMR approximately one year prior to the commencement of final reclamation activities. The quarry floor will be designed to slope gently (±1%) toward a centralized detention area at the center of the quarry floor or near the base of the quarry face, depending on which area has the most effectual rate of percolation. Furthermore, the floor will be ripped on the contour to a depth of 0.5-1 ft to decompact the ground and facilitate percolation of surface runoff.

The existing access road (500 linear ft) will not be decommissioned or altered, as it is the intent of the landowner to utilize the site as a "borrow pit" for logging and ranch related activities. Continued use of the site as a borrow pit is a compatible use on land zoned for timber production. This road is also a portion of existing ranch road that traverses the quarry site and continues through the property in a westerly direction.

3 – Resoiling: Material suitable for resoiling and revegetation is being stored at the site for future use. The fines stockpile (2,000-2,500 yd^3) is located to the north as one enters the quarry site (see Attachment 4), and includes overburden scalped from behind the face just prior to more recent quarrying operations. It is estimated that 15-25% of the material quarried from the site is inapt for road maintenance purposes and has been separated out (screened), and remains onsite for resoiling purposes. Due to the homogeneous nature of material previously quarried from the site, one can expected the percentage or volume of material found suitable for resoiling during future operations to be consistent with that of the past, therefore it is anticipated that future quarrying/processing will result in the accumulation of an additional 6,000-10,000 yd^3 of material suitable for this purpose. County road crews performing ditch maintenance or slide removal projects in the area frequently offload material at the site that is suitable for reclamation as well. Excluding imported material, calculations indicate that at end-of-project, sufficient volumes of material will be stored onsite to resoil the estimated area of disturbance (4.0 acres) to a depth of 18+". The native soil will be spread over the top of the face, catch bench, and quarry floor to promote revegetation. Care will be taken to minimize compaction during spreading. In the event portions of the quarry face are resoiled and seeded, it will be track walked to produce a roughened surface prior to revegetation activities. At the owner's discretion, (as mentioned above) some areas of the site may not be reclaimed and may remain available for borrow operations.

4 – Revegetation: Graded and resoiled areas will be revegetated to facilitate the proposed end use as determined by the landowner.

A certified botanist will determine specific species suitable for revegetation based on a botanical survey of the surrounding area and concurrence with the landowner. Fast growing sterile hybrids (annuals) may be used to facilitate initial vegetative cover and assist with erosion control. No noxious weed species will be included in the seed mix. All work will be performed under direct supervision of the botanist or other qualified individual(s). A typical seed mix for initial revegetation may include a number of (but is not limited to) the following species:

- California brome (*Bromus carinatus*)
- California oatgrass (*Danthonia californica*)
- Three weeks fescue (*Vulpia microstachys*)
- Tomcat clover (*Trifolium wildenovii*)
- California melicgrass *(Melica californica)*
- Barkworth purple needlegrass *(Nassella pulchra)*
- Idaho fescue *(Festuca idahoensis)*
- Blue wildrye (*Elymus glaucus*)
- Regreen wheatgrass x wheat hybrid (*Triticum X Elymus*), this is a sterile, temporary cover crop, ideal for aiding in the establishment of native plant communities.

Areas to be seeded include the top of the quarry face, catch bench, quarry floor, areas of the face capable of supporting plant growth, the perimeter containment berm, and any other areas that have been disturbed by the operation where there is sufficient topsoil to root the above-mentioned species. Seed application density will be approximately 50 pounds per acre; however, specific rates will be determined when the seed mix is finalized. Seed application will be by hydroseeding; mulch and tackifier may be included in the hydroseed mix. Specifications regarding the rate of application, type, depth of mulch, and type of tackifier used will be based on the manufacturer and applicator's recommendation.

In mid-winter, after the initial seed application has sprouted, conifers may be planted within certain areas of operation as deemed appropriate by the landowner. The location density will be determined in consultation with the property owner and botanist.

Revegetation success for grass cover will be based on aerial coverage of 80% one year after planting, and 97% two years after planting. Wherever these goals are not met, the area will be evaluated, and subsequent planting/mulching and soil amending will be performed. Re-vegetation success for conifer will be based on individual plant counts. See *Post-Reclamation Monitoring* on Pg. 17 for additional information regarding revegetation success.

5 – Monitoring and Maintenance:

Containment Berms: Containment berms have been constructed around the perimeter of the quarry to eliminate offsite discharge of stormwater and sediment. They are significant in size and designed to withstand a 20-year/1 hour intensity/magnitude storm event. Furthermore, best management practices (BMP) in the form of gravel sediment traps and straw wattles are maintained at the site to control the discharge of sediment during extreme storm events. End-of-project, reclamation activities will include monitoring and maintenance of all erosion and sediment control devices (ESC) by HCPW. Inspections will occur each fall prior to the commencement of winter storms and subsequent monitoring will occur throughout the remainder of each winter period for a minimum of three years or until the landowner begins borrowing operations. Any sections rebuilt or reconstructed during reclamation will be seeded with native grasses and straw mulch to reduce offsite sediment transport of fines associated with the berm itself.

Slope Stabilization and Erosion Control: The final slope will be graded at 1:1 with a bench mid-slope. This grade is anticipated to provide a stable slope for the geology of the site. Once the slope is resoiled, mulch and tackifying agents will be applied during hydroseeding. Erosion of the quarry face will be controlled by installing rice straw/coir wattles across the slope at 10 ft

intervals (slope distance) and will be staked per manufacturers recommendations. Wattles will be maintained and/or replaced as needed to ensure continued sediment control until revegetation is concluded.

6 – Post-Reclamation Monitoring: Post-reclamation monitoring will consist of two elements, revegetation success, slope stability, and erosion control.

Monitoring for revegetation success will be determined by assessing percent of aerial cover in sample plots located on the regraded quarry face and floor. A qualified botanist, who will also perform the cover assessments, will determine the number, size and location of the plots. In addition, photographs will be taken at established photo points to document revegetation status.

Monitoring for slope stability and erosion control will be accomplished by visual observation of the regraded quarry face, looking for evidence of rill wash, gullying, and soil movement down the slope.

If revegetation and slope stability objectives are not met after three years, monitoring and reactive retreatment activities will be extended until the objectives have been met for two consecutive years.

Time Schedule

Final grading and resoiling, and seedbed preparation will be done during late summer or the fall, and will take two-three weeks to complete. Seeding and mulching will be done prior to the first rainfall event of the season. The site will be revisited in two-weeks intervals during the first winter to monitor for vegetation growth and evidence of erosion.

Additional details for each of the reclamation activities outlined above are provided under the Performance Standards section of this Reclamation Plan.

RECLAMATION PERFORMANCE STANDARDS

Wildlife Habitat

Objective: Restore habitat for use by local wildlife for cover, foraging, and as a migration corridor.

Task: The site will be regraded to topography similar to the surrounding area. The site will be revegetated with native plant species known to be good forage for local wildlife.

Backfilling, Regrading, Slope Stability, Recontouring

Objective: Final slopes to have slope stability factor of safety, suitable for proposed end use, and conforming to surrounding topography.
Task: The 90 ft high quarry face will be regraded to a 1:1 (horizontal: vertical) slope, with a 15 ft wide catch bench at a height of 40 ft. The quarry floor will be graded at an approximately 1% slope toward the base of the quarry face, and scarified to a depth of 0.5-1 ft.

Revegetation

Objective: Establish a vegetative cover suitable for the proposed end use (livestock grazing), wildlife use, and of adequate cover to control erosion and sediment transport: 80% aerial coverage one year after treatment, 97% aerial coverage two years post-treatment.

Tasks: Disturbed areas will be hydroseeded with a mix of natives, fast-growing hybrids, and erosion control grasses. Seed will be applied at the recommended rate for the seed mix and conditions. Seeded areas will be hydro-mulched with wood/fiber mulch and tackifier to ensure topsoil stability and encourage rapid plant growth. Revegetated areas will be monitored for planting success. Areas where adequate cover is not obtained will be reseeded and remulched. Monitoring will continue until revegetation goals have been achieved.

Drainage

Objective: Protect the beneficial uses of local waterways.

Tasks: Final grading of the quarry face and floor will direct stormwater runoff to a saturation trench at the base of the face where runoff will collect onsite and percolate into the ground or evaporate. Design, construct, and maintain an earthen berm capable of containing stormwater in all but the largest storm events. The entire site will be revegetated, resulting in continued erosion control and containment of fine sediment.

Prime Agricultural Land

The quarry is not located on a parcel considered to be prime agricultural land.

Other Agricultural Land

Objective: Reclaim site to be capable of sustaining forestry and agricultural production similar to the surrounding area.

Task: Finished grading will result in slopes capable of holding adequate topsoil for reforestation or forage production. The soil utilized for resoiling/revegetation will be mostly native with some imported from local sources, and be of the same or similar soil type as the surrounding area. A botanical survey and consultation with the property owner will determine the species of plants with which to revegetate the site, and seeding will be done at the appropriate rate to establish grazing land of similar character and quality to the pastures in the surrounding area. Regrowth will be monitored and areas with survival below 80-97% will be replanted. Monitoring and follow-up will continue for three years, or until the site has achieved the 97% survival goal.

Building, Structure, and Equipment Removal

Objective: Removal of all buildings, equipment and supplies not required for the post-reclamation end use.

Task: There are no buildings or structures on the site and no permanent structures are needed for mining operations. All equipment and materials associated with the project will be removed when final reclamation is complete.

Surface and Groundwater Protection

Objective: Protect surface and groundwater from siltation and pollutants.

Tasks: Finished grading will confine stormwater to the site by retaining the perimeter berm and sloping the quarry floor and face so that runoff accumulates and percolates or evaporates in a at the base of the face. No equipment, structures, or materials will be left on the site that would contaminant groundwater.

Topsoil Salvage

Objective: Apply topsoil in a manner that results in stable slopes and produces maximum revegetation success.

Tasks: Soil suitable for topsoiling is being stockpiled onsite for future use in final reclamation. Roadside ditch maintenance projects in the area generate several hundred cubic yards of suitable material annually, which is also stockpiled onsite for final reclamation use. The imported topsoil is of a series and type similar to that of the surrounding area, and suitable for the proposed end use. It is estimated that the accumulated resoiling material at end-of-project will be sufficient in volume to exceed the minimum depths required for successful production of the plant species to be planted (~6-10 inches). Soil will be prepared for revegetation by tracking-in. The seed mix will include fast-growing grasses commonly used to stabilize soil and minimize sediment transport. Straw/coir wattles will be installed on the quarry face slope to minimize soil erosion until vegetation is established.

Tailing and Mine Waste Management

This operation will not result in the production of tailings or mine waste.

Closure of Surface Openings

This is a surface mining operation with no openings to underground workings.

SEDIMENT AND EROSION CONTROL PLAN

Erosion and Sediment Control Principles

This section provides basic information on the principles of erosion and sediment control that shall be applied to the Hansen Quarry project site. This section is further intended to highlight certain principles that are particularly critical to achieving effective control and onsite containment of stormwater and sediment.

- Design the project to fit the natural topography, soils, and drainage patterns through such practices as limiting disturbance of steeper slopes, avoiding disturbance of natural drainage ways, and using soil during resoiling activities with a high infiltration rate, whereas, the characteristics of the site can be used to minimize stormwater runoff, erosion, and sediment transport.

- Emphasize erosion control rather than sediment control. Erosion control minimizes the entrainment of sediment while sediment control removes entrained sediment from runoff. Erosion control is more efficient and cost-effective because it is nearly impossible to entirely remove sediment from runoff once it is entrained. Examples of erosion control include covering disturbed soils and controlling surface runoff using measures such as earthen berms. Another example might be to place wattles at intervals across steep slopes to impede surface flow velocity and reduces erosion. The design of the catch bench is intended to redirect surface flow, impede flow velocity, and reduce rilling. Another illustration of the relative effectiveness of erosion control is straw mulch, which can reduce sediment concentrations in runoff over 90%.

  Since it is nearly impossible to entirely prevent erosion, it will also be necessary to incorporate sediment control devices such as a retention pond, percolation trench, and earthen berm around the perimeter of the site to assure stormwater is contained onsite. Sediment controls vary in their effectiveness, but typically reduce sediment concentrations 50 to 75%. However, sediment controls have little effect on the very fine sediment that causes turbidity, whereas cover measures, such as straw mulch, can be highly effective in reducing turbidity.

- Minimize the extent and duration of area exposed. Restricting disturbance to only those areas utilized for quarrying operations is probably the single most effective form of erosion control. Additionally, exposing areas only as long as necessary reduces the risk of erosion substantially. This can be accomplished by planning the project so that areas are disturbed only when activity is imminent, that disturbed areas are finish graded to contain stormwater onsite, and those areas disturbed outside the limits of containment are straw mulched and/or seed as soon as grading is completed.

- Minimize stormwater sheetflow velocity. While erosion of exposed soil begins with a single raindrop or the wind, the largest volumes of eroded materials are typically associated with concentrated runoff forming rills and gullies. One of the most effective ways to minimize erosion, therefore, is to reduce the possibility of concentrated runoff by intercepting and conveying it in a non-erosive manner to a sediment pond or trap. This includes the use of wattles and mulch, but also includes berms, benches. Seasonal ditches may be used to intercept and control the flow of stormwater as well.

- Retain sediment on site. Sediment retention is less effective than erosion control measures, such as cover, but it is nevertheless a vital part of the project because it is impossible to completely prevent erosion and the entrainment of sediment created by runoff. Sediment can be controlled by allowing stormwater to settle out in a retention basin and/or saturation trench or by filtering runoff from small areas through vegetation or by the utilizing silt fences. Note that settling and filtration typically only remove sand-sized and coarse silt particles. Fine silts and clays cannot be removed in these ways, unless the runoff is released to vegetated areas or through chemical treatment, such as alum, or chitosan introduction or electrofloculation.

- Thoroughly monitor the site and maintain all ESC measures prior to the onset of and throughout the wet season. Maintenance and vigilance are the most vital components of effective ESC management. Certain measures require regular maintenance, monitoring and inspection. The site also needs to be constantly examined to ensure that all areas are protected, that the measures are working together to provide maximum protection.

- Schedule all quarrying and processing activities during the dry season. The climate in the North Coast region is unique in that there are generally well-defined wet and dry seasons. As a result, these events occurring only during the dry season is a very effective form of erosion control. If end-hauling or other activities do occur in the wet season, the need for regular maintenance is even more imperative.

Desired Goals From Implementing Erosion & Sediment Control Measures

To control potential sources of stormwater pollution before they come in contact with any watercourse and to control material pollution and manage waste and non-stormwater existing at the site by implementing effective handling, storage, use, and disposal practices by:

- Effectively control the entry of polluted run-off into the tributary leading to Grizzly Creek during quarrying, processing, or end-haul activities.
- Effectively control stormwater onsite during a 20-year/l hour intensity/magnitude storm event.
- Effectively control sediment discharge from the project site, which could result in increased sedimentation into the tributary leading to Grizzly Creek.

Erosion & Sediment Control Measures

1. Soil Stabilization and Erosion Control

   ✓ Contour finished slopes per engineer's design and criteria to assure a stability factor of safety and slope stability.
   ✓ Preserve existing vegetation where appropriate and where feasible.
   ✓ Control erosion at concentrated flow paths by installing rice straw/coir wattles, straw bales, straw mulch, silt fence, or by ditching. Applies to the quarry face and newly disturbed areas outside the perimeter containment berm only.
   ✓ Control erosion of newly disturbed areas with minimal slopes by straw mulching and/or seeding. This applies to areas outside the perimeter containment berm only.

2. Sediment Control

The primary form of sediment control is onsite stormwater containment.

- ✓ Maintain a downgrade perimeter berm capable of effectively controlling a 20-year/l hour intensity/magnitude storm event.
- ✓ Maintain a (±1%) slope towards a detention area at the center of the quarry floor or near the base of the quarry face.
- ✓ Annually and prior to the wet season, install a saturation trench at the base of the face, whereas, stormwater will collect and percolate into the ground or evaporate.
- ✓ Maintain stormwater diversion berms at the offsite ranch road (decommissioned) to direct sheetflow back to its natural drainage course and minimize the volume of offsite stormwater entering the quarry.
- ✓ Ensure that an appropriate seed mix containing native species shall be planted on disturbed areas outside the perimeter berm. No plant species listed as problematic and/or invasive by the California Native Plant Society and the California Invasive Plant Council, or as may be identified from time to time by the State of California, shall be used for erosion control. No plant species listed as a "noxious weed" by the governments of the State of California or the United States shall be utilized within the construction site. See Pg. 16 for a list of probable species determined to be appropriate for the site.

3. Tracking Control

- ✓ Trackout is not an issue owing to the fact that both the County Road and quarry access road are surfaced with gravel. The access road leading to the quarry will be wetted during the hours of operation to enhance surface armoring and minimize the accumulation of dust. Fine particulate on road surfaced contributes to road surface erosion and offsite sediment discharge during first of the season storm events.

4. Wind Erosion Control

- ✓ Wind erosion is controlled with water. The access road, quarry face and floor will be wetted during quarrying and processing activities. The crushing equipment is fitted with dust suppression equipment to control fugitive dust as well.

5. Inspections and Maintenance

- ✓ Inspection of all ESC devices and structures will occur prior to the onset of and throughout the wet season and will occur intermittently throughout the remainder of the year. Inspections will require an evaluation of the site to ensure that all areas are protected and that all ESC elements are working together to provide maximum protection.

- ✓ Deficiencies requiring maintenance or repair will be evaluated and addressed in a timely manner. Deficiencies that may result in a discharge will be addressed immediately. Certain ESC elements or devices may need to be replaced or repositioned one or more times during the course of the winter to assure adequate protection to minimize the chance for discharge from the site.

STATEMENT OF RESPONSIBILITY

I, the undersigned, hereby agree to accept full responsibility for reclamation of all mined lands as described and submitted herein and in conformance with the applicable requirements of Article 1 and 9 (commencing with Sections 3500 *et seq.* and 3700 *et seq.*, respectively) of Chapter 8 of Division 2 of Title 14 of the California Code of Regulations, the Surface Mining and Reclamation Act of 1975, as amended (Section 2710 *et seq.* of the Public Resources Code), and with any modifications requested by the administering agency as conditions of approval.

Signed this 5 day of, April 20 10

MINE OPERATOR OR OPERATOR'S AGENT

(Printed Name) Tom Mattson

(Mailing Address) 1106 Second Street

Eureka, CA (5501

(Signature) Tom Mattson

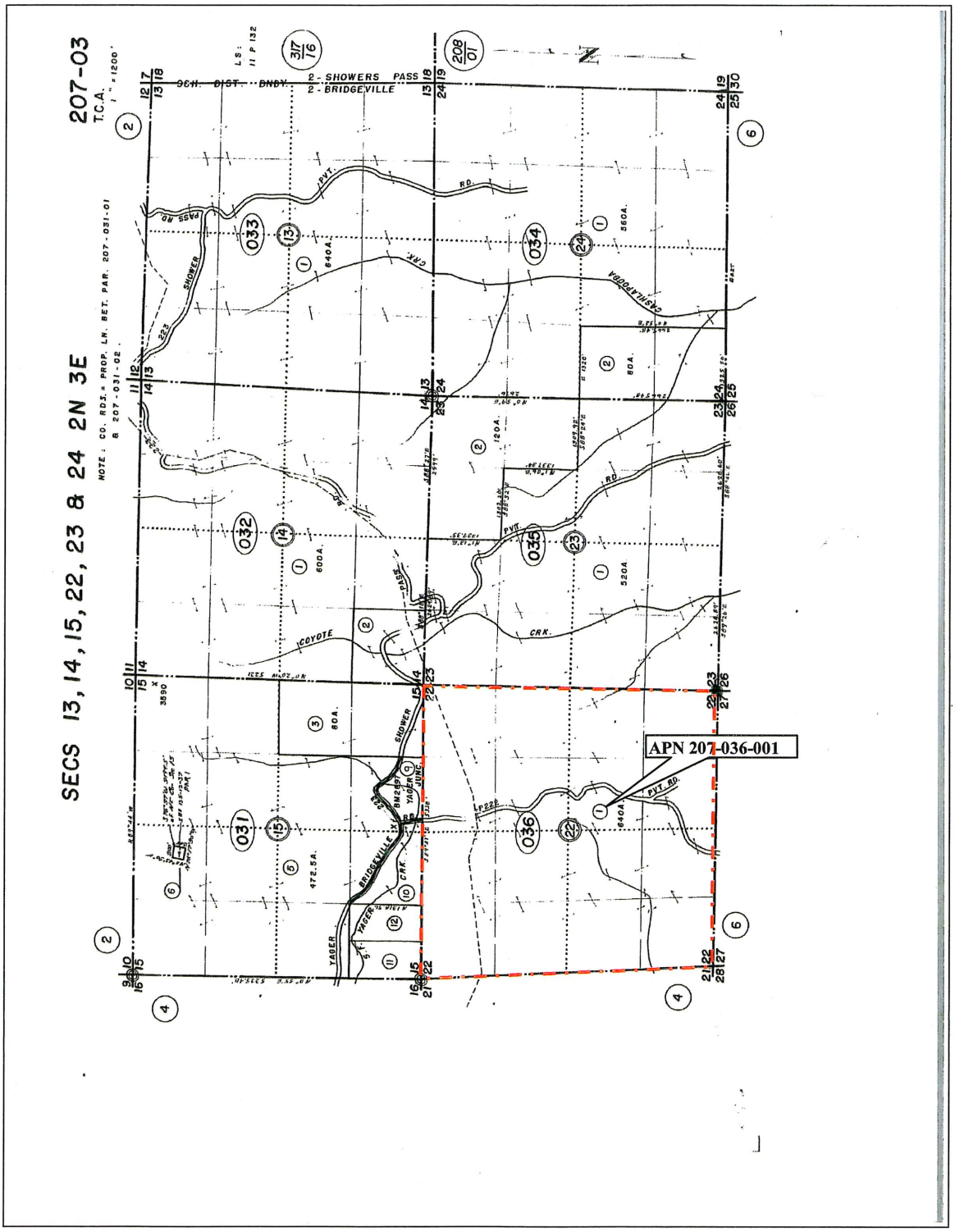
MINE NAME Hansen Quarry

CA MINE ID # 91-12-0028

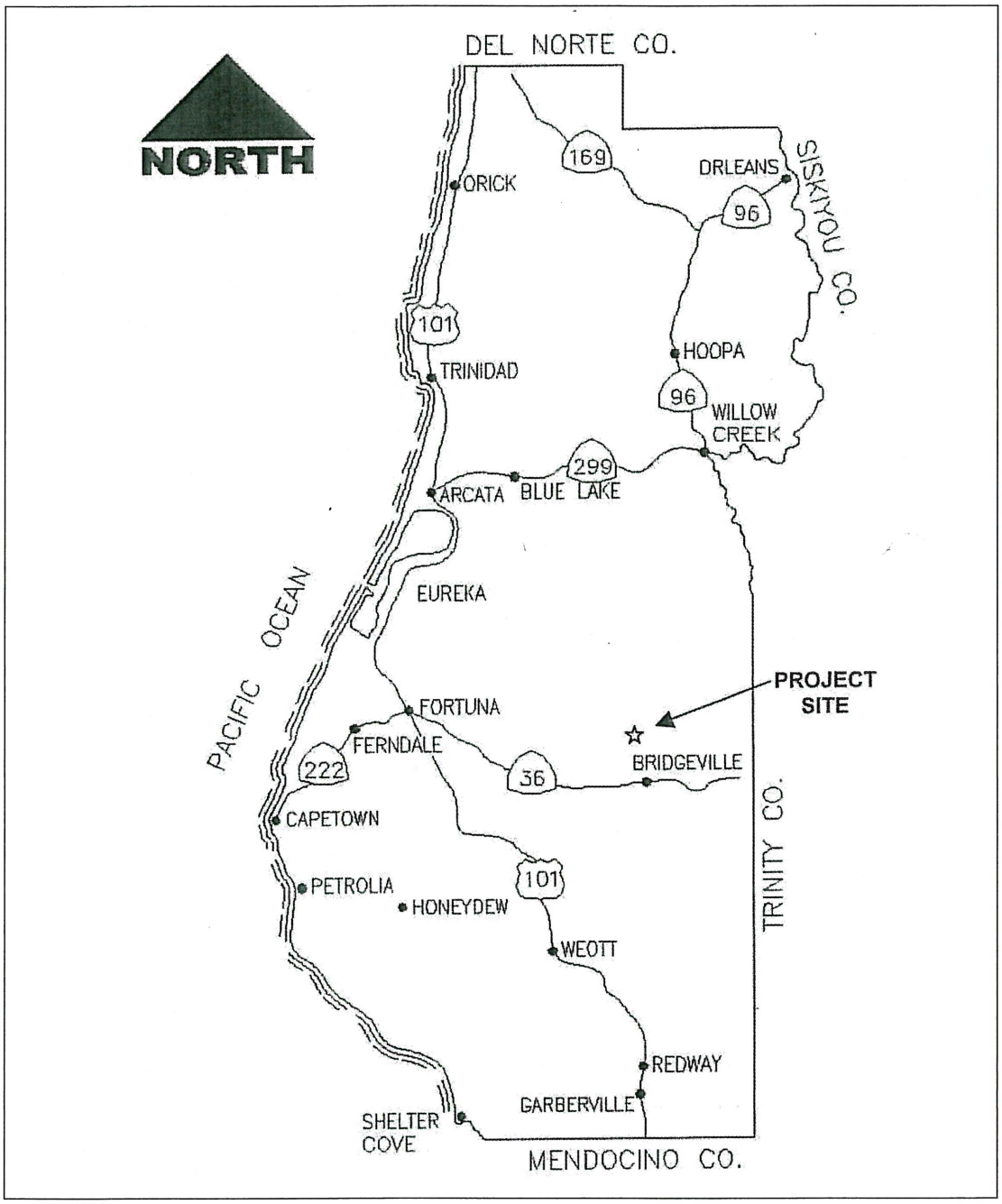
The original must be given to the lead agency and one copy to be forwarded by the lead agency to:

Department of Conservation
Office of Mine Reclamation
801 K Street, MS 09-06
Sacrament CA 95814-3529

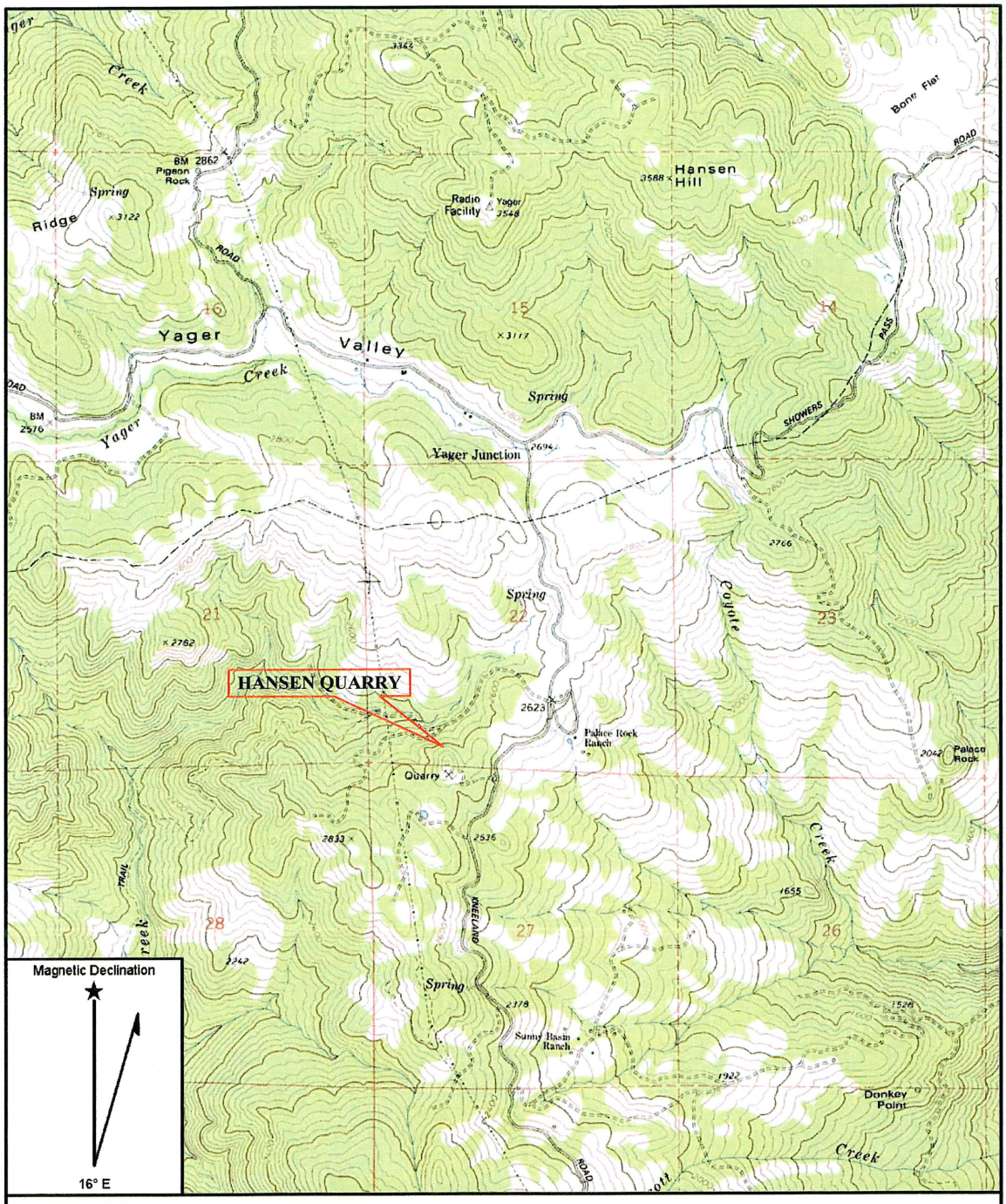
ATTACHMENT 1 – Assessors Parcel Map



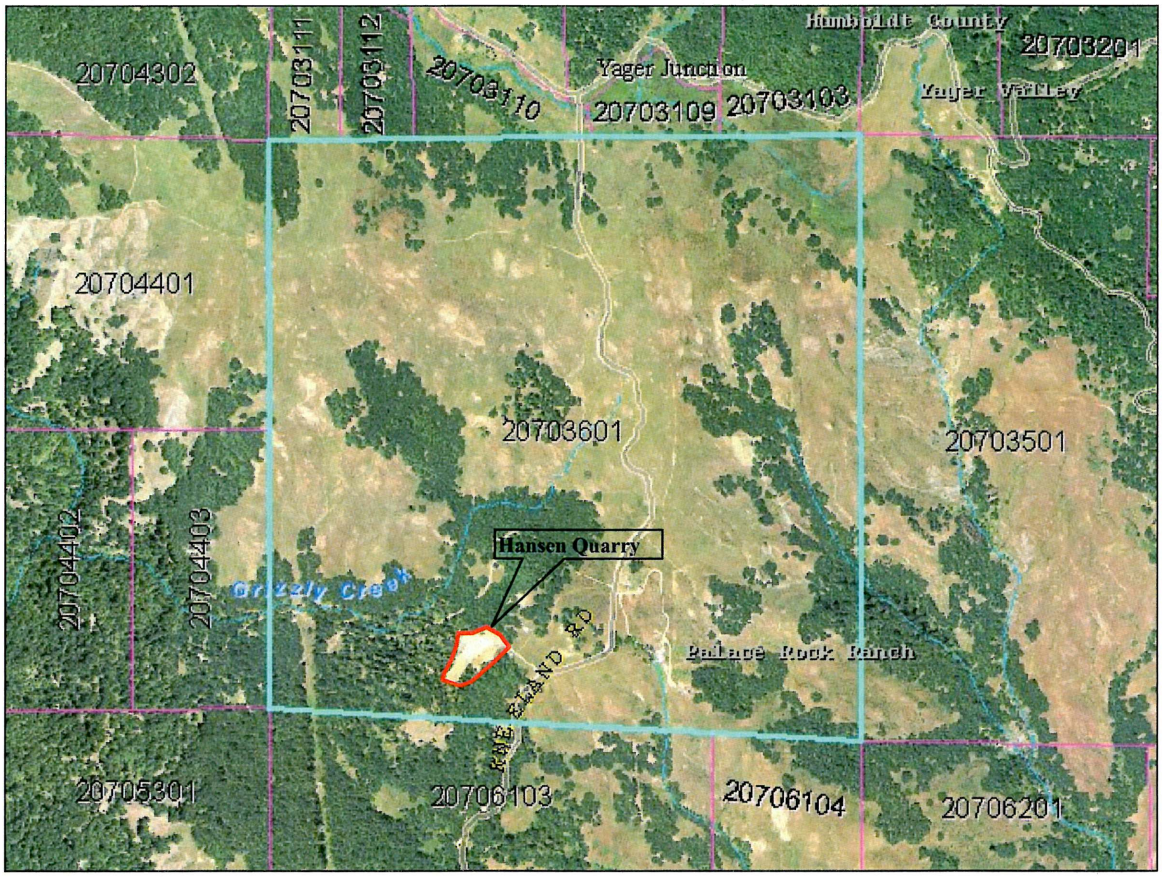
ATTACHMENT 2 – Location Map



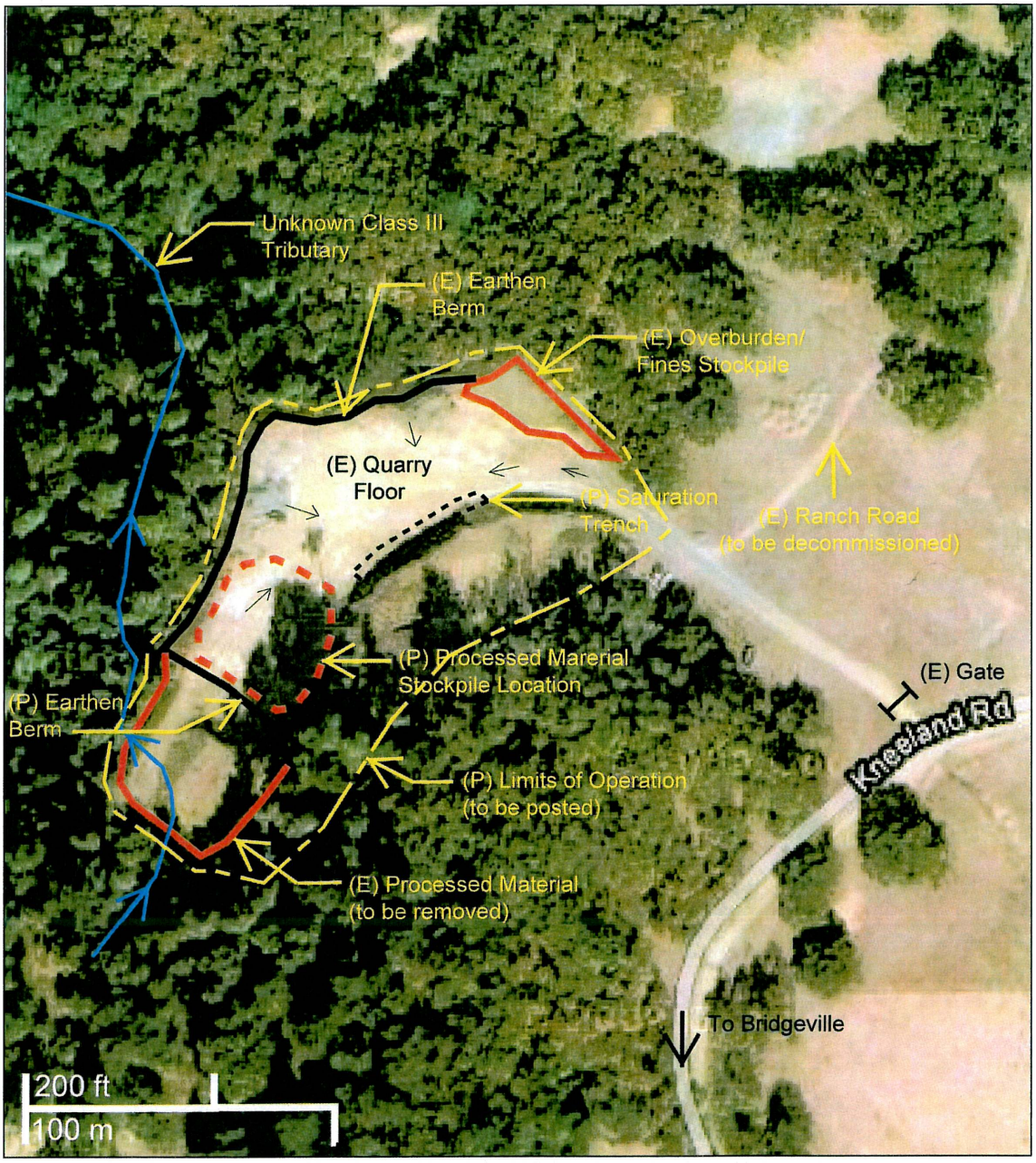
ATTACHMENT 3 A – Vicinity Map



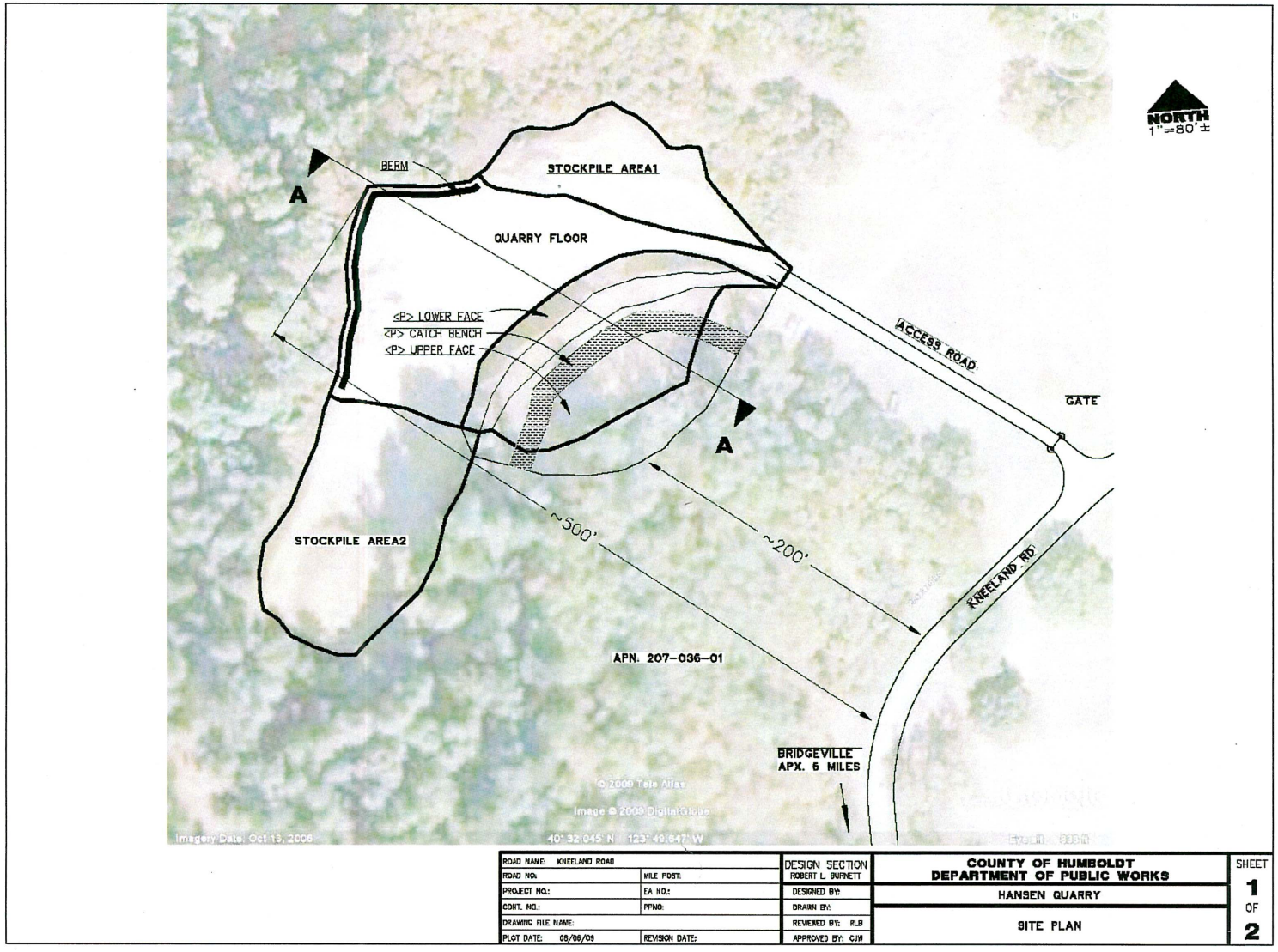
ATTACHMENT 3 B – Vicinity Map



ATTACHMENT 4 – Site Map



ATTACHMENT 5 – Proposed Final Reclamation Plan



ROAD NAME: KNEELAND ROAD		DESIGN SECTION ROBERT L. BURNETT	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO:	MILE POST:		
PROJECT NO.:	EA NO.:	DESIGNED BY:	HANSEN QUARRY
CONT. NO.:	PPNO:	DRAWN BY:	
DRAWING FILE NAME:		REVIEWED BY: RLB	SITE PLAN
PLOT DATE: 08/06/09	REVISION DATE:	APPROVED BY: CJW	

SHEET 1 OF 2

ATTACHMENT 6 – Proposed Final Reclamation Cross Section