MOODY FLATS QUARRY PROJECT
PROJECT DESCRIPTION

DECEMBER | 2009

REVISED FEBRUARY 2011

Lead Agency
Shasta County, Department of Resource Management – Planning Division

Applicant/Operator
Moody Flats Quarry, LLC

BENCHMARK RESOURCES

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Shasta County, Department of Resource Management – Planning Division
1855 Placer Street, Suite 103, Redding, California 96001

Applicant/Operator

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1.0 INTRODUCTION

Moody Flats Quarry, LLC, a wholly-owned subsidiary of 3M Company (Applicant or Operator) proposes to develop the Moody Flats Quarry (Project), a hardrock quarry, to provide a new source of aggregate construction material in Shasta County (County) and the surrounding market. This Project Description summarizes detailed Project information prepared over the last 5 years. The site plan, including a hardrock quarry, aggregate processing facility, stockpile and loadout facility, and rail siding/spur, has been designed based on significant exploration and technical study of the site.

2.0 PROJECT OVERVIEW

The Applicant proposes to develop a hardrock quarry, aggregate processing facility, ancillary aggregate product facilities (e.g. ready-mix concrete plant, asphalt batch plant, and recycled construction materials plant) and aggregate truck and railcar loadout facility within the Applicant owned approximately 1,900-acre property. The Project will provide a new source of high quality aggregate construction material in the County. In addition to supplying aggregate to the local market, the Project plans to supply construction aggregates to the northern California regional market through development of a rail siding/spur and loadout facility to access the Union Pacific rail line that traverses the site.

Production and distribution goals include approximately 1.5 million tons of aggregate shipped via rail to regional markets annually, and 0.5 million tons of aggregate and

finished products (e.g. ready-mix, asphalt) distributed to local markets via trucks. Maximum proposed annual aggregate sales for the Project would be 2 million tons per year. The operation is planned for 100 years and would generate about 175± million tons of aggregate material.

Over 80 percent of the property has a General Plan designation of Mineral Resource (MR) is and zoned Mineral Resource District. Some parcels have General Plan and/or zoning designations different than MR. To ensure that this Project is consistent with General Plan policy MR-a, the Applicant is requesting a General Plan Amendment and Rezone to designate the entire site Mineral Resource with a zoning classification of Mineral Resource District.

The following primary entitlements and discretionary actions are anticipated for the Project:

- A Conditional Use Permit to quarry identified aggregate resources, process those materials on-site (including asphalt and ready-mix concrete plants and a recycled construction materials plant), and stockpile and loadout processed aggregate via truck and rail.
- A Reclamation Plan designed in conformance with the California Surface Mining and Reclamation Act and applicable County General Plan and Zoning designations to provide for an open space use of the land post-mining;
- A General Plan amendment to change the existing General Plan designation of Suburban Residential on assessor parcels 307-280-007, -010, -018, and -019, and 307-230-014 to Mineral Resource (MR) and on assessor parcels 307-230-016 and -017 from Rural Residential A to Mineral Resource;
- A rezone of assessor parcels 307-200-007, -010, -018, -019, and 307-230-014 from Interim Rural Residential and assessor parcels 307-230-016 and -017 from Community Commercial and Design Review District to MR (Mineral Resource District).

3.0 SITE DESCRIPTION

3.1 Project Location

The Project site is located in western Shasta County, California, about 1 mile west of Interstate 5, north of the City of Shasta Lake, and 9 miles north of the City of Redding (see PD-Figure 1, Regional Location, and PD-Figure 2, Site Location). The site lies in

Figure 1, Regional Location

Figure 2, Site Location

Sections 13, 24, and 25 of Township 33N, Range 5W; and Sections 18, 19, 20, and 30 of Township 33N, Range 4W of the Shasta Dam and Project City, California 7.5 U.S. Geological Service topographic map. The Project would be located entirely within the boundaries of the Applicant-owned Assessor's Parcel Numbers (APN) 006-770-002 through 005, 065-500-002 and 004; 307-200-002, 006, 007, 010, 018, and 019; and 307-230-014, 016, and 017 (see PD-Figure 3, Assessor Parcel Map).

3.2 Project Setting

Existing Setting and Land Use

The Project site is located on land that is undeveloped open space, as shown in PD-Figure 4, Existing Conditions Aerial Photograph. The elevation of the property ranges from approximately 800 feet to 2,000 feet above mean sea level (amsl). The property encompasses approximately 1,900 acres dominated by Montane Hardwood-Conifer and Montane Hardwood vegetative habitats. Moody Creek, Rancheria Creek, and Salt Creek transverse the center and eastern portions of the Project site. A Union Pacific Railroad line runs through the eastern portion of the property and Digger Bay Road cuts through the western portion of the property. The northwest corner of the property is within the mapped boundaries of the Shasta-Trinity National Forest.

Interstate 5, a north/south freeway, is the closest major public roadway. The site is surrounded by undeveloped land with limited rural residential properties to the northeast, south, southeast, and southwest. The closest residential properties to quarry development are approximately ½-mile to the southwest and 1 mile to the southeast (see PD-Figure 4). Several other mines are located in the vicinity, with the closest approximately 1.5 miles to the northeast (see PD-Figure 4).

Photographs of existing conditions where project components would be developed are shown in PD-Figures 5a through 5c, Existing Conditions Photographs.

Existing and Proposed Land Use Designations

The Project site is currently designated by the Shasta County General Plan as Mining Resource (MR), Industrial (I), Rural Residential A (RA), and Suburban Residential (SR) (see PD-Figure 6, Existing General Plan Designations). The Shasta County Zoning Code designates the property Mineral Resource, Interim Rural Residential, Community Commercial and Design Review District (C-2-DR), and General Industrial (see PD-Figure 7, Existing Zoning Designations).

Figure 3, Assessor Parcel Map

Figure 4, Existing Conditions Aerial Photograph

Figure 5a, Existing Conditions Photographs

Figure 5b, Existing Conditions Photographs

Figure 5c, Existing Conditions Photographs

Figure 6, Existing General Plan Designations

Figure 7, Existing Zoning Designations

As outlined in Shasta County General Plan, Resource Group, Minerals (MR-a), mining operations over 30 years should be included in the Mineral Resource (MR) land use designation and Mineral Resource (MR) zone district. The policy explains that all parcels involving "extraction, processing, stockpiling, and shipping, and adjacent undeveloped area within the same ownership" shall be included within these zones. Eighty percent of the parcels within the property currently comply with this policy, but seven parcels require changes to their existing general plan and/or zoning designation. Table 1, Existing and Proposed General Plan and Zoning, provides the existing land use designation and zoning of each parcel, and their respective proposed designation and zoning.

TABLE 1
EXISTING AND PROPOSED GENERAL PLAN AND ZONING

APN	Acreage	Existing		Proposed	
		General Plan	*Zoning*	*General Plan*	*Zoning*
006-770-002	143	MR	MR	MR	MR
006-770-003	143.91	MR	MR	MR	MR
006-770-004	156.66	MR	MR	MR	MR
006-770-005	4.5	MR	MR	MR	MR
065-500-002	151.91	MR	MR	MR	MR
065-500-004	152.05	MR	MR	MR	MR
307-200-002	335.79	MR	MR	MR	MR
307-200-006	7.5	MR	MR	MR	MR
307-200-007	71.7	**SR**	**IR**	MR	MR
307-200-010	512.7	**MR/I**	**MR/M**	MR	MR
307-200-018	109.62	**SR**	**IR**	MR	MR
307-200-019	11.88	**SR**	**IR**	MR	MR
307-230-014	40.35	**SR**	**IR**	MR	MR
307-230-016	0.02	**RA**	**C-2-DR**	MR	MR
307-230-017	0.04	**RA**	**C-2-DR**	MR	MR

Notes: Zoning Districts: MR = Mineral Resource District; M = General Industrial; IR = Interim Rural Residential District; C-2-DR = Community Commercial and Design Review District. **General Plan Districts:** SR = Suburban Residential; MR = Mining Resource; I = Industrial; RA = Rural Residential A.

4.0 PURPOSE AND OBJECTIVES

4.1 Purpose of and Need for the Project

The availability, consumption, and demand for aggregate resources in California are issues of concern for both planning and transportation agencies as well as construction

and building industries throughout the state. Aggregate resources provide the construction aggregate necessary for a wide range of public works and private-sector construction projects. The availability and consumption of aggregate resources is critical to the maintenance and growth of the State and local economy and infrastructure.

Pursuant to State mandate, the California Geological Survey (CGS) published a report entitled, *Aggregate Availability in California*, in 2002, with a subsequent update in 2006, documenting the projected 50-year supply and need for aggregate resources in each production construction region (i.e. County, portion of County) of the State. According to the CGS report, Shasta County needs a total of approximately 122 million tons of aggregate through 2056. Shasta County's current aggregate reserves (resources that have been permitted for mining) represent only 42 percent of this 50-year demand (approximately 51 million tons).

4.2 Objectives of the Project

The Applicant has the following Project objectives:

- Obtain a long-term, dependable source of high-quality aggregate to meet the current and projected demand for construction materials within the intended market area, including Shasta County and the northern California region through rail haul of aggregate material.
- Secure the ability to mine and process a known high-quality aggregate resource and establish a new, long-term supply of aggregate reserves capable of producing PCC-Grade aggregate products as well as other construction aggregate products such as riprap, ballast, aggregate base, asphaltic concrete, and ready-mix concrete;
- Provide for a maximum annual permitted sales level of 2 million tons of aggregate material to meet local and regional market demand;
- Mine in a location that contains sufficient buffer lands from incompatible land uses, such as schools, residences, and other receptors, so that hard-rock mining activities, which include blasting and nighttime load-out operations, do not result in substantial land use incompatibilities with existing uses;
- Minimize impacts to wetlands, significant cultural resources, and Shasta Lake; and
- Locate the site near the intended market area and Union Pacific Rail line, thereby alleviating current and future truck traffic and associated impacts, thus providing for an alternative transportation method of aggregate that does not

put additional strain on County infrastructure for products not used within the County.

5.0 SITE PLAN

5.1 Project Reserves and Production

A 100-year Project with maximum annual sales of 2 million tons per year is planned. There are sufficient reserves (approximately 175± million tons) within the site plan for the Project to support marketing up to 2 million tons of aggregate material annually for 100 years. Actual production rates will vary, depending largely upon aggregate consumption demands in the local and regional markets. Although sales would not exceed 2 million tons per year, annual sales in some years could be substantially less than proposed maximum annual levels.

5.2 Operating Schedule and Work Force

Typical Project operating hours would be from 6:00 a.m. to 10:00 p.m. (16 hours per day), Monday through Friday, and 6:00 a.m. to 3:00 p.m. on Saturdays. Processing, loadout, and hauling of aggregate material off-site and loading of rail cars will occur up to 24 hours a day, 7 days a week. To accommodate CalTrans and other public agency projects, the Asphalt Batch and Ready-Mix Concrete Plants could also operate and load out material 24 hours a day, 7 days a week.

Proposed operations, including mining, processing, and administrative functions, would employ between 25 and 50 people. Employees would be primarily skilled workers in the construction materials industry such as heavy equipment operators, maintenance personnel and support staff.

5.3 Access and Project Traffic

Traffic will enter and exit the Project site via a private access road connecting with Wonderland Boulevard via the Interstate 5/Mountain Gate freeway off-ramp. Access to the Project site will be controlled by a gate at the entrance point to the Project site. The gate will be closed and locked whenever the Project is not in active operations. Internal haul roads within the site will be surfaced with gravel, paved, or hard-packed dirt.

Aggregate material not transported off-site via rail will typically be hauled in 25-ton trucks to its destination. The regional road system in the vicinity of the Project is shown

on PD-Figure 8, Regional Transportation Network. Annual and maximum daily Project trip generation is provided in Table 2, Project Trip Generation.

TABLE 2
PROJECT TRIP GENERATION

Parameter	Trip Generation (One-Way)	
	Annual	*Maximum Daily*
Asphalt	8,800	128
Ready-Mix Concrete	15,556	111
Aggregate (Outside Sales)	16,000	175
Cement Delivery Trucks	1,244	7
Asphalt Material Delivery Trucks	815	9
Fuel, Service, and Delivery	150	3
Recycle Material Delivery	2000	7
Employee Vehicle Trips	7,200	24
Total	**51,765**	**464**
ANNUAL TRAIN TRIPS		
Aggregates (Export Market)	250	Based on 60-car-unit train with 100-ton capacity/car.

A second site access point will connect to Digger Bay Road, near the northwest corner of the site. This access point will be limited to access for equipment, ANFO delivery, and employee traffic when operations necessitates such access, primarily during North Pit operation. No material transport would occur through this access.

Emergency access to and from the site would not only be provided by the Wonderland Road and Digger Bay Road access points, but also two additional emergency-only access roads. The first emergency access road connects an existing on-site drill road near the South Pit to Digger Bay Road. The second emergency access would follow an existing road near the southeast corner of the site to Black Canyon Road.

5.4 Site Security and Fencing

All site facilities are located on private property. The top slope of the Quarry highwalls would be fenced and bermed. The site entrance and northwest access point would be gated and fenced. Signage would be provided around the entire property boundary. Private security services will be provided if determined necessary by the Operator.

Figure 8, Regional Transportation Network

6.0 OPERATIONS DESCRIPTION

This section describes the specific components of the operation. The locations of all activities are shown on PD-Figure 9, Site Plan. Table 3, Quarry and Reclamation Plan Data Summary, summarizes key components of this Project.

TABLE 3
QUARRY AND RECLAMATION PLAN DATA SUMMARY

Design/Operating Characteristics	Description/Parameters/Assumptions[1]	
OPERATIONAL ACTIVITIES		
Quarrying	Excavation through drilling, blasting, and heavy equipment operation.	
Processing	Aggregate processing plant, asphalt batch plant, ready-mix concrete plant, recycled materials plant, rail loadout, and settling ponds.	
Reclamation	Grading, overburden/topsoil replacement and revegetation.	
QUARRY AND RECLAMATION DATA		
Acreages		
Total Parcel(s)	1,900± acres	
Project Acreage		
North Pit	220± acres	
South Pit	65± acres	
Overburden Fill Site	60± acres	
Primary Processing Plant	15± acres	
Secondary and Ancillary Processing and Loadout Area	60± acres	
Access and Maintenance Roads	10± acres	
Primary Facilities Total Disturbance	**430± acres**	
Volume		
Annual Quarry Production (marketed)	2± million tons	
Volume of Reserves	175± million tons	
Overburden and Process Waste	10-20 percent	
Operations Period[2]		
Mining	100 years	
Final Reclamation	5 years	
Quarry Excavation Area Dimensions[3]	**North Pit**	**South Pit**
Approximate Maximum Length	4,300 feet	2,500 feet
Approximate Maximum Width	3,000 feet	1,600 feet
Maximum Depth (bgs)	800 feet	425 feet

Design/Operating Characteristics	Description/Parameters/Assumptions[1]
Operating Hours and Work Force Typical Operating Hours	Quarry and Primary Processing Plant: 6:00 a.m. to 10:00 p.m. Monday – Friday, 6:00 a.m. to 3:00 p.m. Saturdays Secondary and Ancillary Processing and Loadout Area, Haul Truck, loadout and hauling, and railcar loadout: 24 hours a day, 7 days a week
Reclamation Areas Open Space	 365± acres

Notes:

[1] All values approximate.

[2] Mining and reclamation may be completed within a shorter timeframe depending on market demand for the product.

[3] Measured at the longest and widest point.

6.1 Project Phasing

Quarry

The 100-year life of the Project will include the development of two quarry areas (see PD-Figure 10, Quarry Plan, and PD-Figure 11, Quarry Plan Cross-Sections). Planned quarry development would begin in the South Pit with reserves sufficient to last approximately 20 to 30 years, and include establishment of the adjacent primary processing plant. While the Applicant plans to begin operations in the South Pit, geology, environmental constraints, and/or economic factors may require initiation of quarry activities within the North Pit first, or operations within each pit concurrently. Both the North and South Pits would be developed in a typical hardrock quarry bench/ highwall configuration created through successively deeper cuts (benches) in the rock until design depth is reached. As such, there is no further phasing as each pit is continuously operated.

Secondary and Ancillary Processing Plant and Loadout and Overburden Fill Area

The secondary and ancillary processing and loadout area, overburden fill area, and rail siding/spur would be developed concurrently with mining (see PD-Figure 12, Secondary and Ancillary Processing and Load-Out Area, PD-Figure 13, Overburden Fill Area and Primary Processing Plant, and PD-Figure 14, Overburden Fill Area and Primary Processing Plant Cross-Section).

The secondary and ancillary processing and loadout area would be developed in two phases. The initial phase will include development of a pad on the northeast side of Moody Creek for a portable secondary and tertiary processing plant, ready-mix

Figure 9, Site Plan

Figure 10, Quarry Plan

Figure 11, Quarry Plan Cross-Section

Figure 12, Secondary and Ancillary Processing and Load-Out Area

Figure 13, Overburden Fill Area and Primary Processing Plant

Figure 14, Overburden Fill Area and Primary Processing Plant Cross-Section

concrete plant, asphalt batch plant, and aggregate loadout facility including a scale and scale house. Stationary equipment would initially be operated using portable generators. Construction of the access road and rail siding/spur would be completed during this phase. The rail siding/spur facility would include construction of an inbound track and two storage tracks. Portable trailers would be brought on-site for use as temporary office facilities. It is anticipated that this initial phase would last between 5 and 15 years depending on market demand for aggregate products, economic factors, and mitigation measures/conditions of approval imposed during the environmental review process.

The second phase would include diversion of Moody Creek and expansion of the secondary and ancillary processing and loadout areas sufficient to meet the demand of producing 2 million tons of aggregate annually, including installation of a permanent secondary and tertiary processing plant, connection to the electricity grid to power stationary facilities, and permanent office facilities. If sufficient regional aggregate demand warrants expansion of the rail siding/spur facility a fourth track, identified as a runaround track, would be constructed.

6.2 Quarry Plan and Operations

Vegetation, Topsoil, and Overburden Removal

Prior to aggregate removal, vegetation will be removed in the immediate working areas and managed on-site (e.g. mulched for erosion control, burned, etc.) or transported off-site (e.g. landfill/greenwaste facility, sold as product, cogeneration) depending on the type of vegetation removed and available uses. Topsoil salvaged from the site, as available, would be handled and stored differently depending on current site needs. If areas for concurrent or final reclamation were available then topsoil would be used for those immediate purposes. Otherwise topsoil would be stockpiled separately from overburden within the active mining area for future distribution on completed benches or the quarry floor. Topsoil used in concurrent and final reclamation may be amended with silts and fines from silts ponds and stormwater facilities if necessary and available.

After the topsoil is stripped and stockpiled, if any, overburden (i.e. soil and other weathered aggregate material not suitable for sale or blending) will be removed. The Applicant estimates that about 8 million cubic yards of overburden material may be excavated over the 100-year life of the Project. Overburden materials would consist of material not suitable for use in aggregate production, silt material from the aggregate washing system, and silts excavated during maintenance of stormwater control

systems. Depending on market conditions, it is possible that some overburden could ultimately be sold as product.

Some overburden materials would be used for construction of pads for permanent on-site facilities and use in concurrent and final reclamation. It is anticipated that approximately 4 million cubic yards of overburden would be necessary for construction of catchment berms on quarry benches and fill for equipment and processing facility pads. The remaining overburden would be permanently stockpiled in the overburden fill area. Once clearing of vegetation, topsoil, and overburden is complete for the active operations area, aggregate removal will commence.

Excavation and Blasting

Operations at the site will use conventional mining practices common in the industry. Quarrying is initiated by establishing a working bench at the upper quarry limit. As the initial bench is extended laterally along the quarry face, a new bench is established at the next lower level. Bench areas are extended until the planned quarry backwall is reached; successive benches are developed as the quarry progresses downward. The quarry would be excavated with an overall (stepped) slope of 1:1 (1 horizontal to 1 vertical) (see PD-Figure 15, Conceptual Quarry Excavation Cut Slope). The maximum depth of excavation would occur in the South Pit, approximately 950 feet amsl (425 feet bgs).

Mineral reserves will be removed through a combination of drilling, blasting, and excavation equipment. All blasts will occur during daylight hours and only on regular business days (not on weekends or federal holidays). The transportation, storage, and handling of explosives will be performed or supervised by a licensed explosives expert contracted or employed by the Operator. Explosive materials, typically ammonium nitrate and fuel oil (ANFO), may be stored on-site. The Applicant will comply with all federal (i.e. Bureau of Alcohol, Tobacco, Firearms, and Explosives) and local law enforcement (i.e. Shasta County Sheriffs Department) regulations regarding transportation, use, and detonation of blasting materials.

Loaders or similar excavating equipment will remove the aggregate for processing after blasting. Blasted rock will be loaded onto haul trucks and transported to or within the primary processing plant adjacent to the active pit.

Figure 15, Conceptual Quarry Excavation Cut Slope

6.3 Plant Facilities and Equipment

Primary Processing Plant

Raw aggregate from the active quarry area would be transported via loader or haul truck to an aggregate plant for primary processing. A primary crusher/feeder would be located within the active quarry or primary processing plant area to initiate processing (see PD-Figure 9). The material discharged from the primary crusher would be moved along a series of conveyors to a large surge pile. Raw feed from the surge pile would be drawn from a tunnel system under the surge pile and conveyed to the secondary and ancillary processing and loadout area.

Secondary and Tertiary Processing Plant

The secondary and tertiary processing plant would be located within the secondary and ancillary processing and loadout area and able to process up to 1,000 tons per hour. Aggregate material would be separated by a large vibrating screen that would isolate the larger material for reduction in a secondary cone crusher. Smaller material would be screened out as base material or conveyed for additional screening and reduction in tertiary crushers. The material would then be conveyed to the dry finished product screens to be used for making of asphalt materials or to the washed finished product screens to be used in production concrete aggregates and other washed materials. The smaller fractions of these materials may be washed in a sand screw tank to remove clays and mineral fines and, ultimately, to generate concrete sand.

Wash water containing suspended fines from the wet plant (used for washing aggregate material) would be piped to a settling pond and/or water clarifying system. If a water clarifier system is used, the fines would be separated and slurried to a belt press system where additional water would be removed to create a stackable fines product. The fines material would be sold as product, mixed with overburden and/or topsoil for use in reclamation (if necessary or appropriate), or transported and deposited into the overburden fill area. If a settling pond system is used, periodic cleaning would be required to remove fines that have settled. These fines would used in a manner similar to water clarifier fines discussed above. The cleaned water from the settling ponds and/or clarifying system would be continuously recycled back through the wet plant or used for on-site dust control.

The various finished materials produced at the plant would be conveyed into separate stockpiles. Tunnels containing conveyors would be situated beneath the asphalt aggregate and concrete aggregate stockpiles. This aggregate would be fed into the

asphalt batch plant and concrete batch plant. Other aggregate products would be loaded onto trucks, weighed at the on-site truck scale and ticketed for delivery off-site or loaded onto rail cars for delivery to the regional market.

Asphalt Batch Plant

The asphalt batch plant would be located within the secondary and ancillary processing and loadout area (see PD-Figure 12). The asphalt batch plant would have a production capacity of approximately 200 tons per hour and an annual production of approximately 220,000 tons per year. Aggregate material would be fed from the asphalt aggregate stockpiles. The plant would heat and dry the aggregate in a rotary dryer fueled by liquid propane gas. Exhaust gases and suspended dust would be blown through sealed ductwork to a bag-house pollution collection system. The processed dust would be removed and recycled back into the asphalt product. A percentage of recycled asphalt product may be added to the mix at this point, along with hot asphaltic oil. The finished product would then be transported up to an enclosed drag-slat conveyor to a set of insulated and sealed load-out silos. Truck loading and weighing, would be conducted within the sealed silos, thus minimizing air emissions.

Ready-Mix Concrete Plant

The ready-mix concrete plant would be located within the secondary and ancillary processing and loadout area (see PD-Figure 12). The production rate is approximately 200 tons per hour and approximately 280,000 tons per year. Aggregate material would be fed from the concrete aggregate stockpiles and sent to the batch tower. Aggregate, cement, and water would be separately weighed and blended in a mixer. Dust generated within the plant would be drawn through a bag-house system and returned to the concrete product. The concrete mix would be poured into mixer trucks, after which the loads would be ticketed and sent to their destination.

Recycle Plant

The recycle plant would be capable of crushing asphalt concrete, broken Portland Cement Concrete, and a combination of asphalt and Portland Cement Concrete. The plant could produce recycled base rock and/or recycled asphalt product for recycling back into the hot mix asphalt plant. Actual production at the plant would depend on the available supply of material for recycling.

Recycle materials generated from construction demolition sites would be trucked in and stockpiled adjacent to the recycle plant area. Material would be loaded into the feeder

by wheel loader. A grizzly (gravity-fed sorting chute) would remove the fines and direct the larger-sized material to the jaw crusher. The jaw would be wide enough to accept large slabs, and could reduce the slabs to a conveyable material. Once on the main belt, a large magnet downstream of the crusher would pull off any rebar or steel present in the crushed material. The rebar and steel would be collected and sent to a metal recycler.

The material would be sent over a screen deck for sizing and separation and oversize material would go to another crusher for further reduction and recirculation to the screen deck. The throughput material would be conveyed to a stockpile. Recycled base product would be loaded onto trucks and sent to the truck scales for weighing and ticketing. Finished recycled asphalt product would be sent to the asphalt plant for recycling into the asphalt batch plant.

Equipment

Table 4, Typical Site Equipment, describes the types of processing plants and mobile equipment that would typically be used in Quarry operations.

TABLE 4
TYPICAL SITE EQUIPMENT

Equipment[1]	Fuel	Uses
MINING OPERATIONS		
Scrapers	Diesel	Removal of topsoil and overburden
Dozers	Diesel	Stripping, reclamation and surge feed to shovels/loaders
Blast-hole Drill Rigs	Diesel	Drilling holes for placement of explosives
Bulk emulsion distribution truck	Diesel	Load bulk explosives into drill holes.
Hydraulic Shovels or Front-end loaders	Diesel	Used to load haul trucks at quarry face
Haul Trucks	Diesel	Haul raw aggregate material from quarry face to primary crushing area
Excavator w/hammer	Diesel	Breaking down over-sized rocks
Motor Grader	Diesel	Maintain access and haul roads.
Water Truck	Diesel	Water haul road and access roads.
ROCK PROCESSING PLANT OPERATIONS		
Primary Crusher and Grizzly Feeder	Electricity	Reducing oversized rocks to approximate size for conveyor transport.
Pit Conveyor	Electricity	Conveying raw materials to raw material stockpiles at the primary processing plant

Equipment[1]	Fuel	Uses
Secondary, tertiary cone crushers	Electricity	Reducing rock to products specification sizes.
8 x 24 dry Screens	Electricity	Sort rock to specified sizes.
8 x 24 wet Screens	Electricity	Wash and sort rock to specified sizes.
Plant Conveyors	Electricity	Transfer material between processes.
Stockpile Conveyors	Electricity	Stockpile finished aggregate for load-out.
Overland Conveyor	Electricity	Convey aggregate material to secondary and ancillary processing and load-out area..
Load-out silos	Electricity	Load processed aggregate materials onto trucks for delivery off-site.
Front-end loaders	Diesel	Load processed aggregate materials onto trucks for delivery off-site.
Water Truck	Diesel	Water stockpile area and access roads.
Asphalt Batch Plant	Electricity and Natural Gas	Used to manufacture asphaltic concrete from rock products produced on-site and from asphalt oil delivered and stored on-site.
Ready-Mix Concrete Plant	Electricity	Manufacturing of ready-mix concrete using rock products produced on-site and Portland cement delivered and stored on-site.
Recycled Materials Plant	Electricity	Manufacturing of recycled products using asphalt and concrete delivered from off-site.
Portable Diesel Generator	Diesel	Provide power to temporary and/or portable processing plant.
ADMINISTRATIVE EQUIPMENT		
Scales	Electricity	Weighing trucks for sales tonnage
Office	Electricity	Mine offices
Shop	Electricity	Equipment Maintenance shop
Pickups/Mechanics Trucks	Gas/Diesel	Maintenance and administrative vehicles
FUEL STORAGE		
Above-ground Diesel Fuel Storage Tanks (10,000 gallon capacity)	N/A	Storage of fuel for mobile and stationary equipment
Fuel Pump	Electricity	Transfer of fuel from storage tank
Above-Ground Gasoline Tank	NA	Storage of fuel for trucks and mobile equipment.
Cement Storage Silo	NA	Storage of cement.
Above-ground Asphalt Oil Storage Tank	NA	Storage of asphalt oil for use in manufacturing of asphaltic concrete.
Natural Gas Storage Tank	NA	Storage of natural gas.
Ready-Mix Concrete Storage Silo	NA	Storage of cement.

Notes: [1] Equipment will be purchased at the time it is needed and may differ somewhat from equipment listed here.

N/A = Not Applicable

The type of vehicles used would vary somewhat over time depending on availability, the introduction of new models to suit different on-site conditions, and the need to perform specific short-term quarrying/reclamation tasks.

Rail Siding/Spur

The Project will initially result in the construction of three rail lines including an inbound track and two storage tracks. A fourth track, the runaround track, may be constructed in the future. At full build-out, the rail siding/spur facility will have the capacity to load two trains a day, with each train having 100 rail cars.. Each rail car can hold approximately 100 tons of aggregate, therefore each train could transport approximately 10,000 tons of aggregate per a trip.

Operation of the rail siding/spur would begin with the delivery of empty rail cars by Union Pacific. The delivered cars would be moved onto the inbound track and then split approximately 60/40 onto the two storage tracks. The Operator would then load aggregate product via loader or conveyor into the empty rail cars. The empty and loaded rail cars would be toggled between storage track 1 and 2 until all rail cars were loaded. Once all rail cars are loaded they would be attached to a locomotive and routed south back onto the Union Pacific mainline for transport to the regional market.

Ancillary Facilities

Stationary equipment and structures would be located within the secondary and ancillary processing and loadout area. Up to four buildings could be used, including administrative offices, a laboratory, storage shed, and maintenance shop. An equipment maintenance and fuel storage site would service on-site equipment and fuel trucks for off-site deliveries. Tanks for diesel, oil, and hydraulic fluids would be sited in this area.

6.4 Water Usage and Management

Water Supply and Consumption

Consumptive water requirements are comprised of water (moisture) content in product and waste fines (e.g. silt), dust control (mining and processing), aggregate washing, and evaporation from any open pond surface (e.g. settling ponds). At the proposed processing rate of 2 million tons per year, projected water consumption in those five categories is about 260 acre-feet per year (afy) at full production. The total consumptive water requirement of 260 afy is the cumulative volume of water required to be supplied

on an on-going basis from well/impoundments on the property throughout the operating life of the quarry. The total consumptive water requirement will be supplied from one or more wells and recycled water from settling ponds.

Water Reclaiming/Recycling

Wash water containing suspended fines from the aggregate plant would be piped to a series of settling ponds or water clarifier system adjacent to the plant. After aggregate washing of aggregate, the water will discharge into a sediment pond. This pond will be designed to allow sediment to fall to the bottom and clean water to overflow and be recycled back through the dewatering process. Periodically, fines will be dredged from the bottom of the pond and utilized as a binder in base rock production or blended with topsoil and/or overburden material.

If a water clarifier system is used, water would be separated from the aggregate fines in a settling tank and belt press system. The fines would be deposited in the overburden fill area or sold as product. The clean water from the clarifier system would be continuously recycled through the wash plant and back to the clarifier. Using either method, it is estimated that 70 to 75 percent of wash water would be recycled.

6.5 Fuels

Trucks and other mobile equipment would be run on diesel and gasoline. Diesel and gasoline fuels would be stored on-site in aboveground tanks (refer to Table 4) on an impervious surface with secondary containment, as required by existing regulations.

A mobile fuel and lubrication truck would be used to service vehicles on-site. The fuel/lube truck can carry a limited amount of petroleum products, is equipped with automatic shut-off valves to prevent spills, and also carries appropriate absorbent materials to contain and recover spillage. An approved Spill Prevention, Control, and Countermeasures (SPCC) Plan would guide reporting, control, and cleanup activities in the event of a spill in the quarry or other operating areas.

6.6 Utilities and Lighting

Currently, there is no power available at the Project site. The Applicant eventually plans to connect to the power grid through the extension of power lines; in the interim, portable diesel generators will provide power for equipment on-site.

The Project will also include providing sanitary systems using portable chemical toilets in Project areas that require temporary, mobile sanitation (e.g. active quarry area) and may include an engineered wastewater treatment and disposal system in areas of permanent structures and buildings.

Nighttime operations will require lighting for worker safety. Lights will be positioned in accordance with applicable OSHA and MSHA safety standards and in locations that minimize glare and light off-site.

7.0 RECLAMATION

Mine reclamation is required by the California Surface Mining and Reclamation Act (SMARA). SMARA requires mines to be reclaimed to a usable condition that is readily adaptable for a productive alternative land use that creates no danger to public health or safety. A Reclamation Plan has been submitted as part of the application materials in compliance with SMARA regulations.

Proposed reclamation is shown on PD-Figure 16, Reclamation Plan, and PD-Figures 17a and 17b, Reclamation Plan Cross-Sections. The plan provides for a site that is suitable for post-mining open space as allowed under the proposed General Plan and Zoning Code. The South Pit may not be backfilled, as shown on PD-Figure 16, but reclaimed to a condition suitable for water storage. In addition, the secondary and ancillary processing and loadout area, rail siding/spur improvements, and access road would remain post-reclamation.

8.0 PERMITS AND APPROVALS

8.1 Shasta County Approvals

As the local land use authority, the County is the public agency with the greatest responsibility for approving the Project as a whole and therefore is the lead agency for purposes of environmental review under CEQA. The County has the discretionary authority over the following land use entitlements and permits which are necessary to carry out the Project:

- Conditional Use Permit;
- Reclamation Plan;
- General Plan Amendment;

Figure 16, Reclamation Plan

Figure 17a, Reclamation Plan Cross-Sections

Figure 17b, Reclamation Plan Cross-Sections

- Rezone; and
- Encroachment Permit.

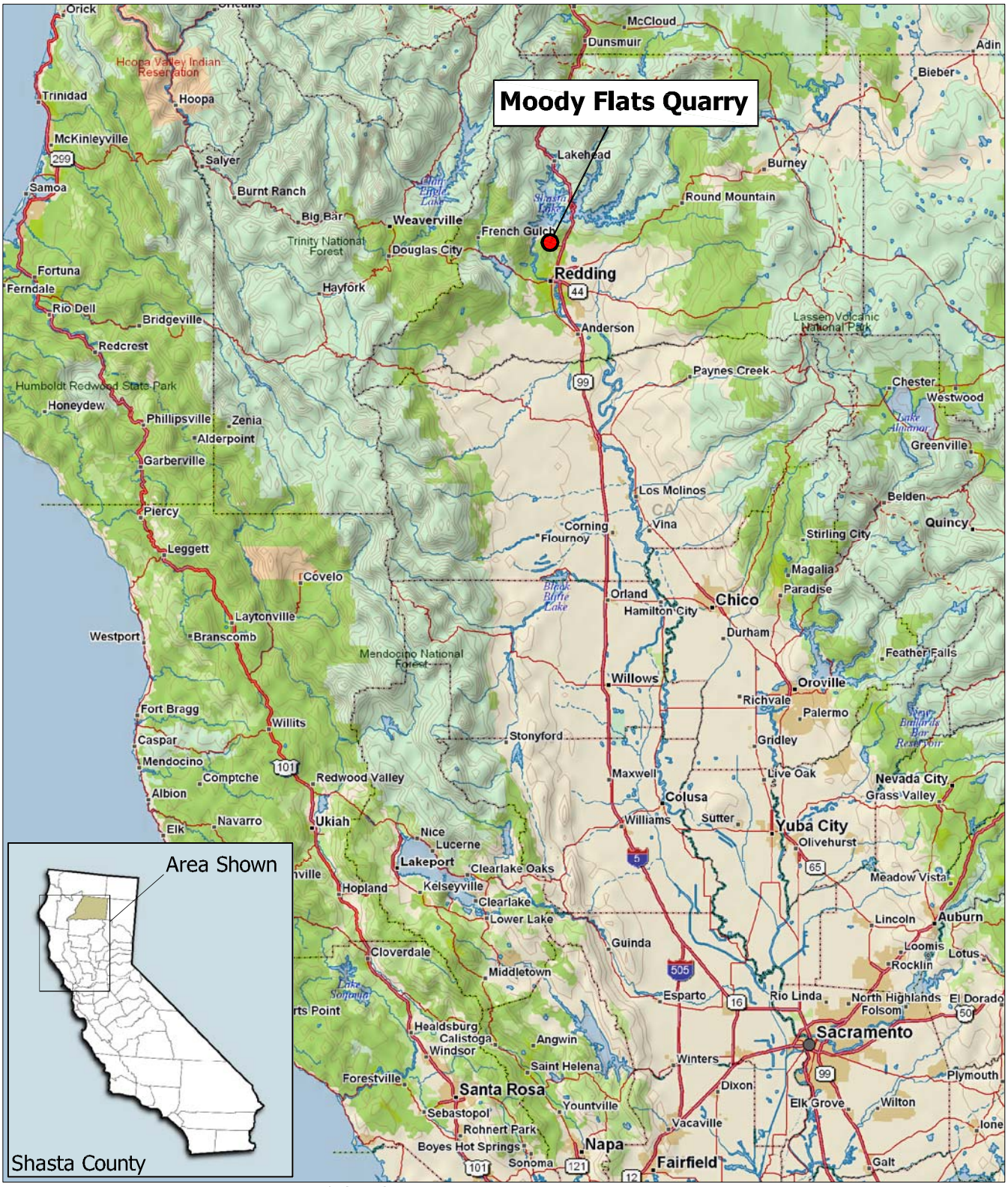
8.2 Other Potential Permits and Approvals

Table 5, Potential Permits and Approvals, provides a preliminary list of Federal, state, and local agency approval that may be required during permitting and following approval of this Project.

TABLE 5
POTENTIAL PERMITS AND APPROVALS

Agency/Department	Permit/Authorization	Requirement and Potential Site Applicability
FEDERAL AGENCIES		
Army Corps of Engineers, Sacramento District	Individual/ Nationwide Section 404 Discharge Permit (Clean Water Act, 33 USC 1341)	Dredge/ fill into "waters of United States," including wetlands, if needed.
US Fish and Wildlife Service, Sacramento Field Office	Federal Endangered Species Act Section 7 biological opinion	Individual take of federally listed threatened and endangered species or their habitat
Mine Safety and Administration	Notice of Commencement of Operations	Noticing the ownership and location of the mine
	Emergency Fire, Evacuation, and Rescue Plan	Potential emergency situations plans required for surface operations
	Legal Identity Report	Noticing the ownership and location of the mine
	Miner Training Program	Mine safety training programs educating workers
	MSHA Identification Number	Tracking all mine sites
STATE AGENCIES		
Regional Water Quality Control Board, Central Valley Region	General Construction Activity Stormwater Permit; Notice of Intent (40 CFR Part 122)	Stormwater discharges associated with construction activity.
	Waste Discharge Permit (Water Code 13000 *et seq.*)	Discharge of wastewater that may affect groundwater quality; may be needed at this site for placement of fines on wash ponds and reclamation.

Agency/Department	Permit/Authorization	Requirement and Potential Site Applicability
State Water Resources Control Board	General Industrial Activity Stormwater Permit. Notice of Intent (40 CFR Part 122)	Stormwater discharges associated with industrial activity, unless covered by individual NPDES Permit.
	Spill Prevention Control and Countermeasures Plan. (Health and Safety Code 25270 *et seq.*; 40 CFR Part 112.)	Above ground storage with 10,000+ gallons; or any spill affecting surface waters, single tank of 600 gallons or 1,320 total.
California Department of Fish and Game, Redding Office	Lake/Streambed Alteration Agreement (Fish and Game Code 1602)	Change in natural state of river, stream, lake (includes road or land construction across a natural streambed). Required for impacts to state listed or candidate, threatened or endangered species.
	2081 Permit	
SHASTA COUNTY		
Planning Department	Environmental Impact Report	Compliance with the California Environmental Quality Act (CEQA). Required prior to granting land use entitlements.
	Use Permit/Mining Permit (SMARA PRC 2710 *et seq.*)	Activities where use is conditional in a particular zone; required by Shasta County for mining operation at this site.
	Reclamation Plan and Financial Assurance (PRC 2710 *et seq.*)	Compliance with the Surface Mining and Reclamation Act (SMARA).
County Public Works Department	Building Permit	Construction/use of structures.
	Road encroachment	Activities within county rights-of-way; needed for improvement of access road to site.
Air Pollution Control Districts	Authority to Construct (Local district rules, per Health and Safety Code 42300 *et seq.*)	Constructing, modifying or operating a facility or equipment that may emit pollutants from a stationary source.
	Permit to Operate (Local district rules)	Operating equipment that may emit pollutants from a stationary source.
Shasta County Sheriff's Department	Blasting Permit	Blasting activities required to dislodge aggregate material.



SOURCE: DeLorme TOPO USA USGS Topoquads (2006)

N

0 25 miles

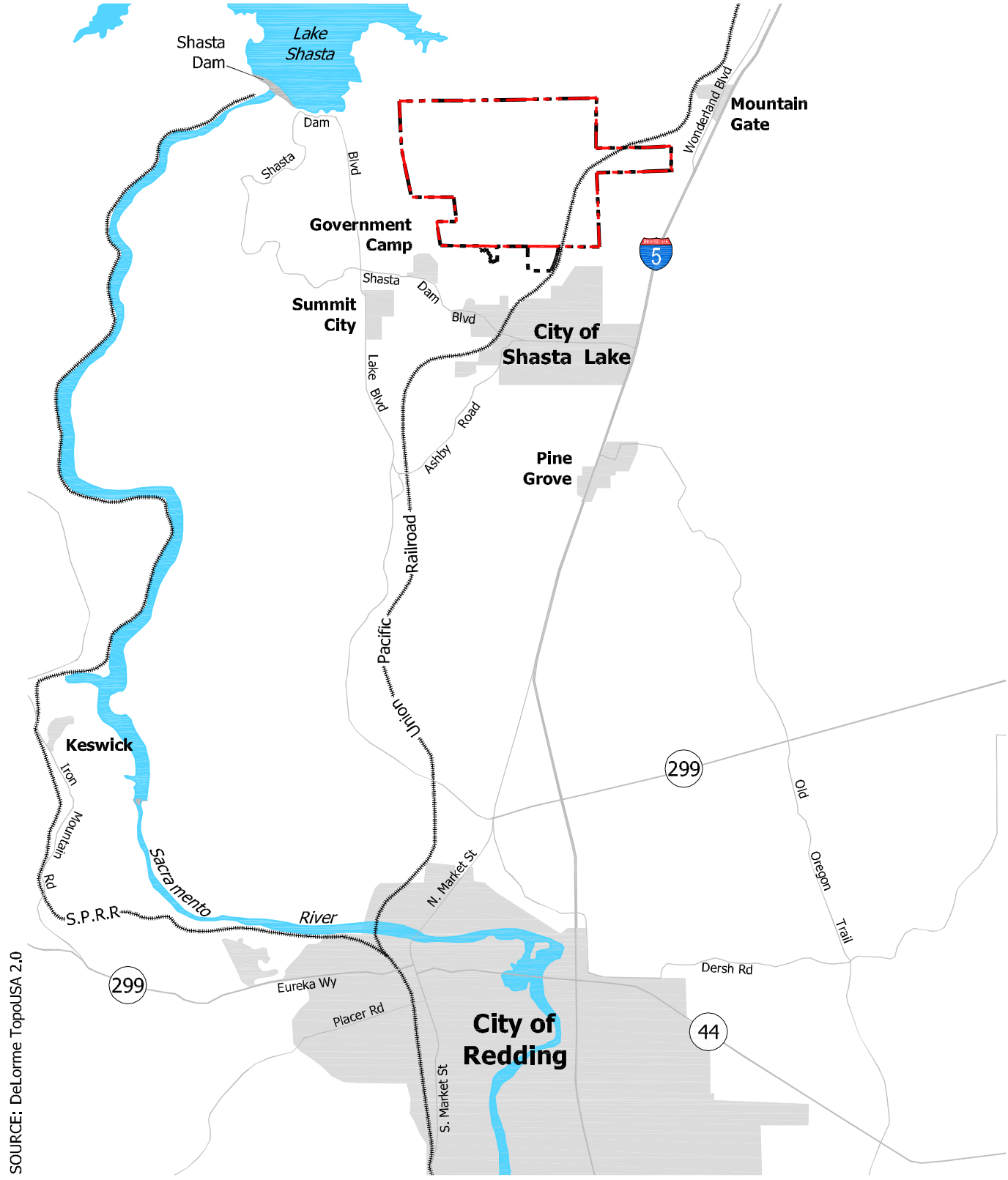
SCALE: 1" = 25 miles

BENCHMARK RESOURCES

Regional Location

MOODY FLATS QUARRY

PD - Figure 1

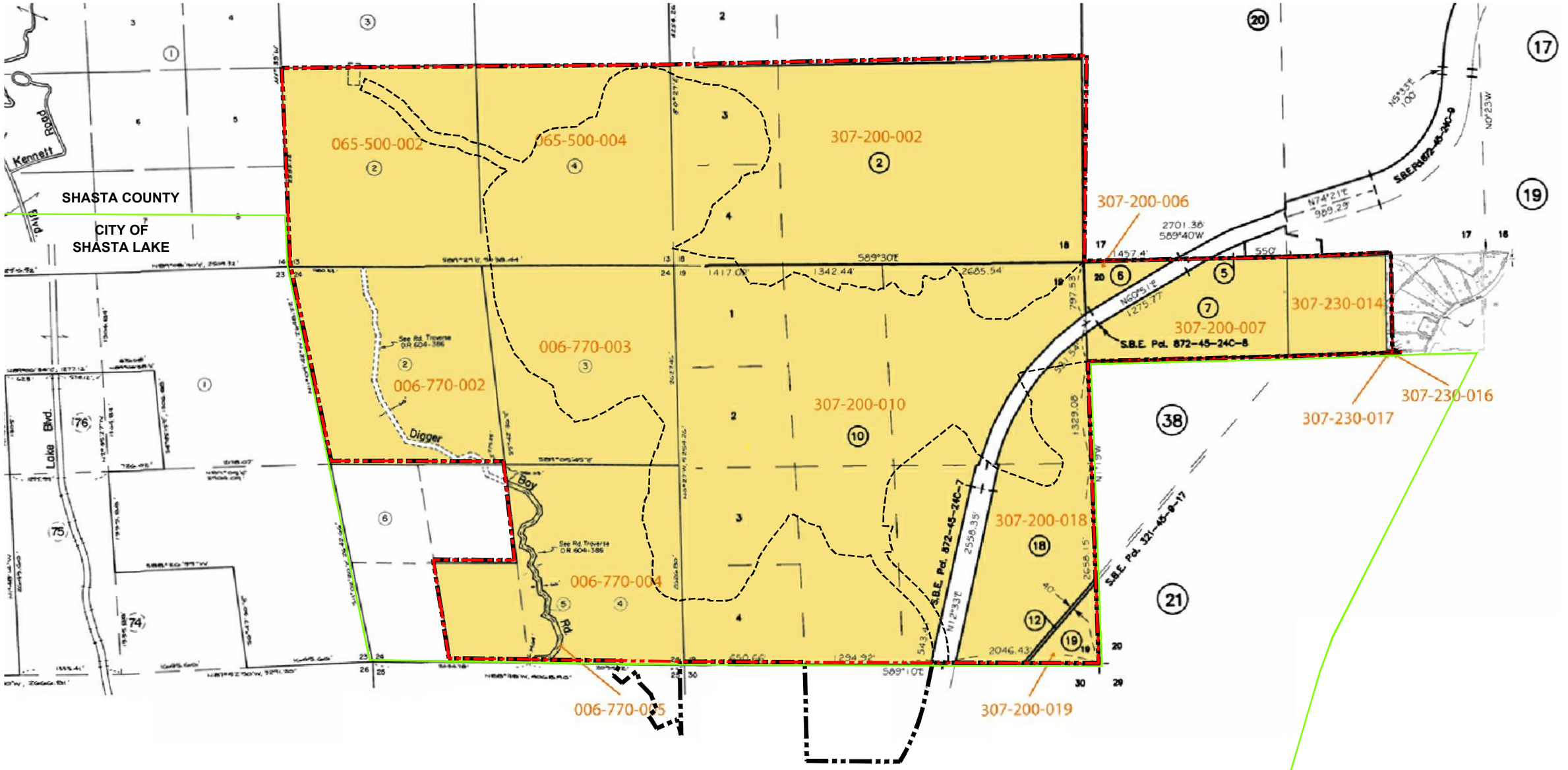


BENCHMARK RESOURCES

Site Location

MOODY FLATS QUARRY

PD - Figure 2



SOURCE: Shasta County Assessors Office

N

0 1/4 mile

SCALE: 1" = 1/4 mile

Property Ownership

Site Boundary

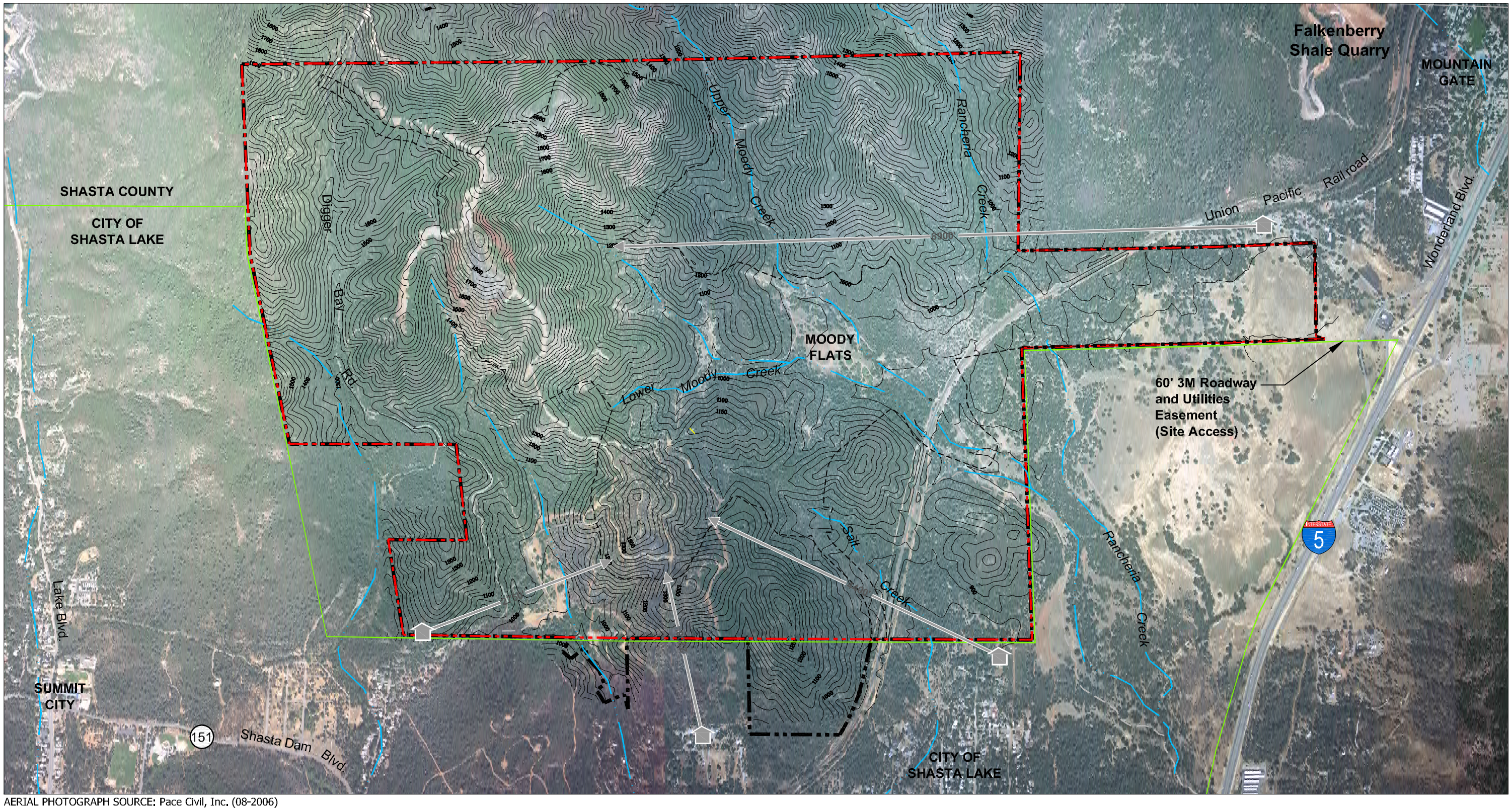
Limits of Surface Disturbance

BENCHMARK RESOURCES

Assessors Parcel Map

MOODY FLATS QUARRY

PD - Figure 3



AERIAL PHOTOGRAPH SOURCE: Pace Civil, Inc. (08-2006)

N

0 1/4 mile

SCALE: 1" = 1/4 mile

Property Ownership	± 1900 acres
Site Boundary	± 1810 acres
Limits of Surface Disturbance	± 760 acres
City of Shasta Lake Boundary	
Residence	

BENCHMARK RESOURCES

Existing Conditions Aerial Photograph

MOODY FLATS QUARRY

PD - Figure 4

PHOTOGRAPH DATE: 08-2008

North Pit Mineral Resource (View from West)

PHOTOGRAPH DATE: 08-2008

South Pit Mineral Resource (View from West)

Existing Conditions Photographs

MOODY FLATS QUARRY

PHOTOGRAPH DATE: 08-2008

Secondary and Ancillary Processing and Load-Out Area (View Southwest)

PHOTOGRAPH DATE: 08-2008

Overburden Fill Area

Existing Conditions Photographs

MOODY FLATS QUARRY

PHOTOGRAPH DATE: 08-2008

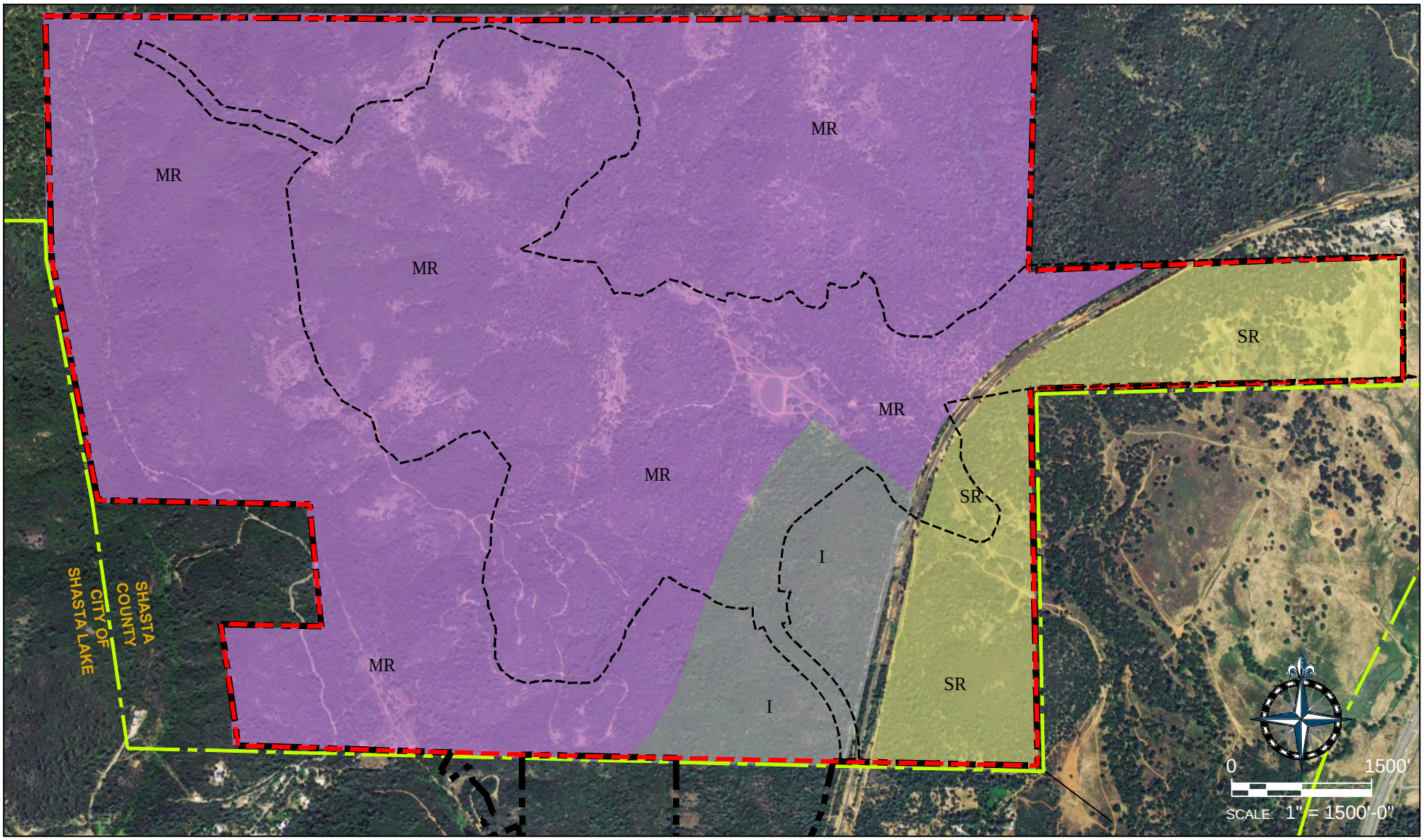
Overpass Location

PHOTOGRAPH DATE: 08-2008

UP Main Line and Rail Siding/Spur Location

Existing Conditions Photographs

MOODY FLATS QUARRY



Property Ownership

Site Boundary

Limits of Surface Disturbance

City of Shasta Lake Boundary

SOURCE: Shasta County General Plan

General Plan:

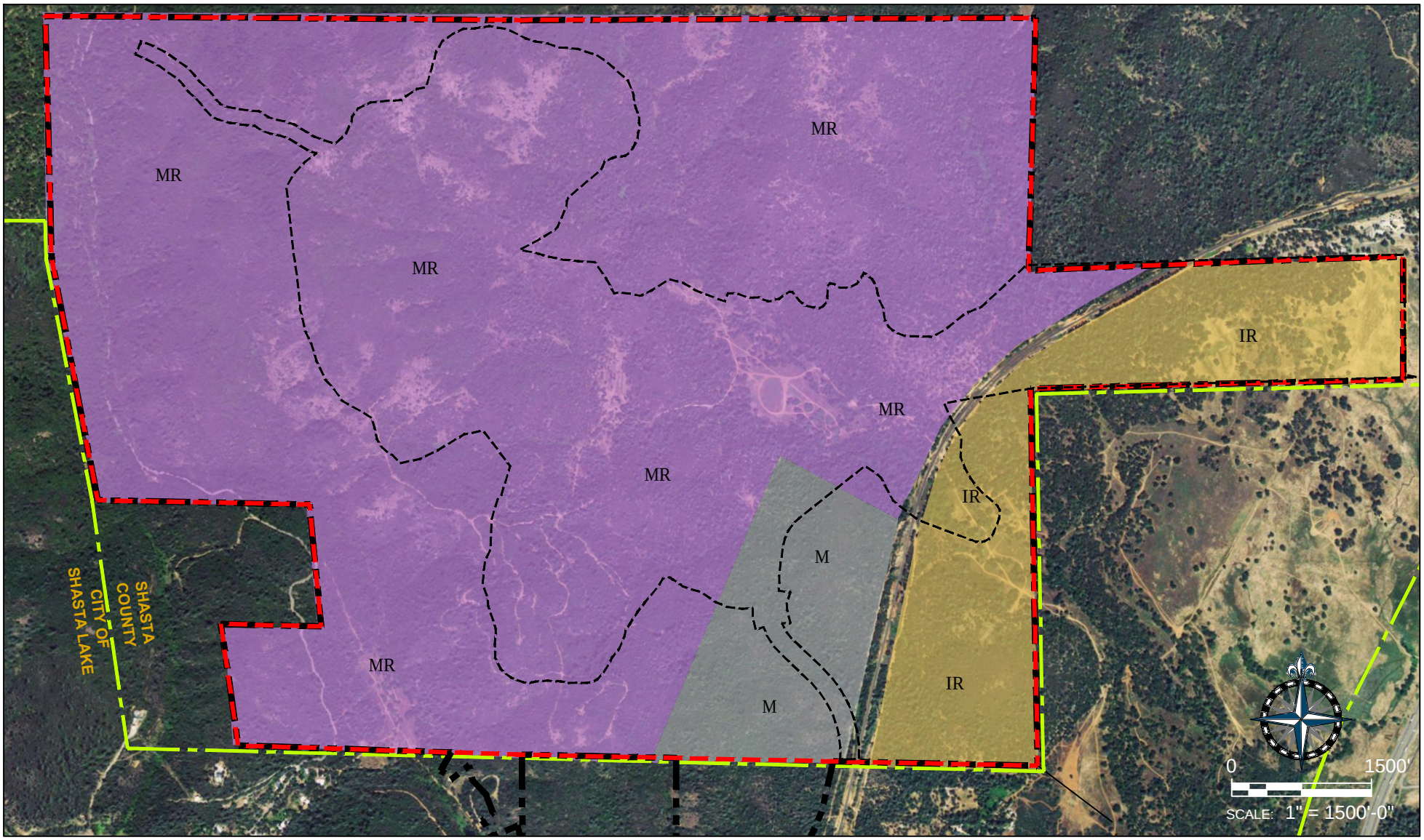
- I Industrial
- SR Suburban Residential
- MR Mineral Resource

Existing General Plan Designations

MOODY FLATS QUARRY

BENCHMARK RESOURCES

PD - Figure 6



SOURCE: Shasta County Assessors Office

Property Ownership

Site Boundary

Limits of Surface Disturbance

City of Shasta Lake Boundary

Zoning:

- M — General Industrial
- IR — Interim Rural Residential
- MR — Mineral Resource

Existing Zoning Designations

MOODY FLATS QUARRY

BENCHMARK RESOURCES

PD - Figure 7