3.0. PROJECT DESCRIPTION

3.1 INTRODUCTION

Section 15125 of the California Environmental Quality Act (CEQA) Guidelines requires an Environmental Impact Report (EIR) to include a description of the physical environmental conditions of the project site and the site vicinity, as they exist at the time the Notice of Preparation is published, from a local and regional perspective. Knowledge of the existing environmental setting is critical to the assessment of environmental impacts. Pursuant to CEQA Guidelines Section 15125, the description of the environmental setting shall not be longer than necessary to understand the potential significant effects of the project.

The Project Description chapter of the EIR provides a comprehensive description of the Idaho-Maryland Mine Project (proposed project) in accordance with CEQA Guidelines. Please note that this chapter provides an overall general description of the existing environmental conditions; however, detailed discussions of the existing setting in compliance with CEQA Guidelines Section 15125, as it relates to each given potential impact area, is included in each technical chapter of this EIR.

3.2 PROJECT LOCATION

The proposed project concerns two separate project sites: the Brunswick Industrial Site and the Centennial Industrial Site (see Table 3-1), totaling 175.34 acres. In addition, the proposed project would include approximately 0.30-acre of off-site improvements associated with a potable water pipeline easement. The potable water pipeline easement would be located along East Bennet Road, through the existing right-of-way.

Table 3-1
Project Site Summary

Project Site	Assessor Parcel Numbers	Acreage	Existing Zoning	Existing General Plan Designations
Brunswick Industrial Site	009-630-037	21.80	M1-SP[1]	IND[2]
	009-630-039	15.07	M1-SP	IND
	006-441-003	15.19	M1-SP	IND
	006-441-004	0.85	M1-SP	IND
	006-441-005	50.01	M1-SP	IND
	006-441-034	16.01	M1-SP	IND
	Brunswick Industrial Site Subtotal:	*118.93*	--	--
Centennial Industrial Site	009-550-032	0.48	M1[3]	IND
	009-550-037	4.47	M1	IND
	009-550-038	40.1	M1	IND
	009-550-039	0.98	M1	IND
	009-550-040	0.13	M1	IND
	009-560-036	10.25	M1	IND
	Centennial Industrial Site Subtotal:	*56.41*	--	--

	Project Sites Total:	**175.34**	--	--
Potable Water Pipeline Easement	009-560-045	--	M1	IND
	009-560-016	--	M1	IND
	Off-Site Total:	**0.30**	--	--

1. M1-SP is defined as Light Industrial with Site Performance Combining District, per the County's Zoning Code.
2. IND is defined as Industrial, per the County's General Plan.
3. M1 is defined as Light Industrial, per the County's Zoning Code.

Both project sites are located within unincorporated western Nevada County and are owned by Rise Grass Valley (see Figure 3-1 and Figure 3-2). The 119-acre Brunswick Industrial Site (APN's, 006-441-003, -004, -005, -034; and 009-630-037, -39) is located southwest of the intersection of East Bennett Road and Millsite Road, and is accessible from Brunswick Road or East Bennett Road (see Figure 3-3). The 56.41-acre Centennial Industrial Site (APN's 009-550-032, -037, -038, -039, -040; and 009-560-036) is located southwest of the intersection of Idaho Maryland Road and Centennial Drive (see Figure 3-4).

3.3 GENERAL PLAN BACKGROUND

The Nevada County General Plan was originally approved by the Board of Supervisors in 1996.[1] The General Plan has been subsequently amended in 2008 (Safety Element), in 2010 (Circulation Element and Housing Element, 4th Revision) and in 2014 (Land Use Element and Housing Element, 5th Revision). More recently the County Board of Supervisors has adopted amendments to the Safety and Noise Elements in October 2014. In addition, the Nevada County General Plan was updated to include updates to both the 6th Cycle Housing Element (2019-2027), which was adopted by the Board of Supervisors on June 25, 2019 via Resolution No. 19-362. The Safety Element has been updated as a result of the 2017 updated to the Local Hazard Mitigation Plan (adopted in 2018). The Board of Supervisors adopted the Safety Element on February 11, 2020 via Resolution No. 20-044. The Nevada County General Plan is the long-term policy guide for the physical, economic, and environmental future of the County.

3.4 PROJECT SITE BACKGROUND

The project sites contain the historic Idaho-Maryland Mine underground gold mine. The mine produced 2,414,000 ounces of gold between 1866 and 1956. The mine has been inactive since closure in 1956, and was inactive for several periods during the 1866-1956 production period. The entire mine was allowed to flood with water in 1901 and was subsequently dewatered in 1904. The mine was again allowed to flood with water in 1904 and was subsequently dewatered in 1919. After its final closure in 1956, the mine was allowed to flood again.

In 1941, the Idaho-Maryland Mine employed approximately 1,000 workers and was California's largest lode gold mine and the second-largest lode gold mine in the U.S., based on annual production. The Idaho-Maryland Mine encompasses an extensive system of approximately 73 miles of underground tunnels, many raises, four inclined shafts, and two vertical shafts. The historic mining operation had extensive surface infrastructure adjacent to the Centennial Industrial Site and at the Brunswick Industrial Site, most of which has been dismantled and removed.

[1] Nevada County. *Nevada County General Plan.* Updated 2014.

Figure 3-1
Regional Location Map

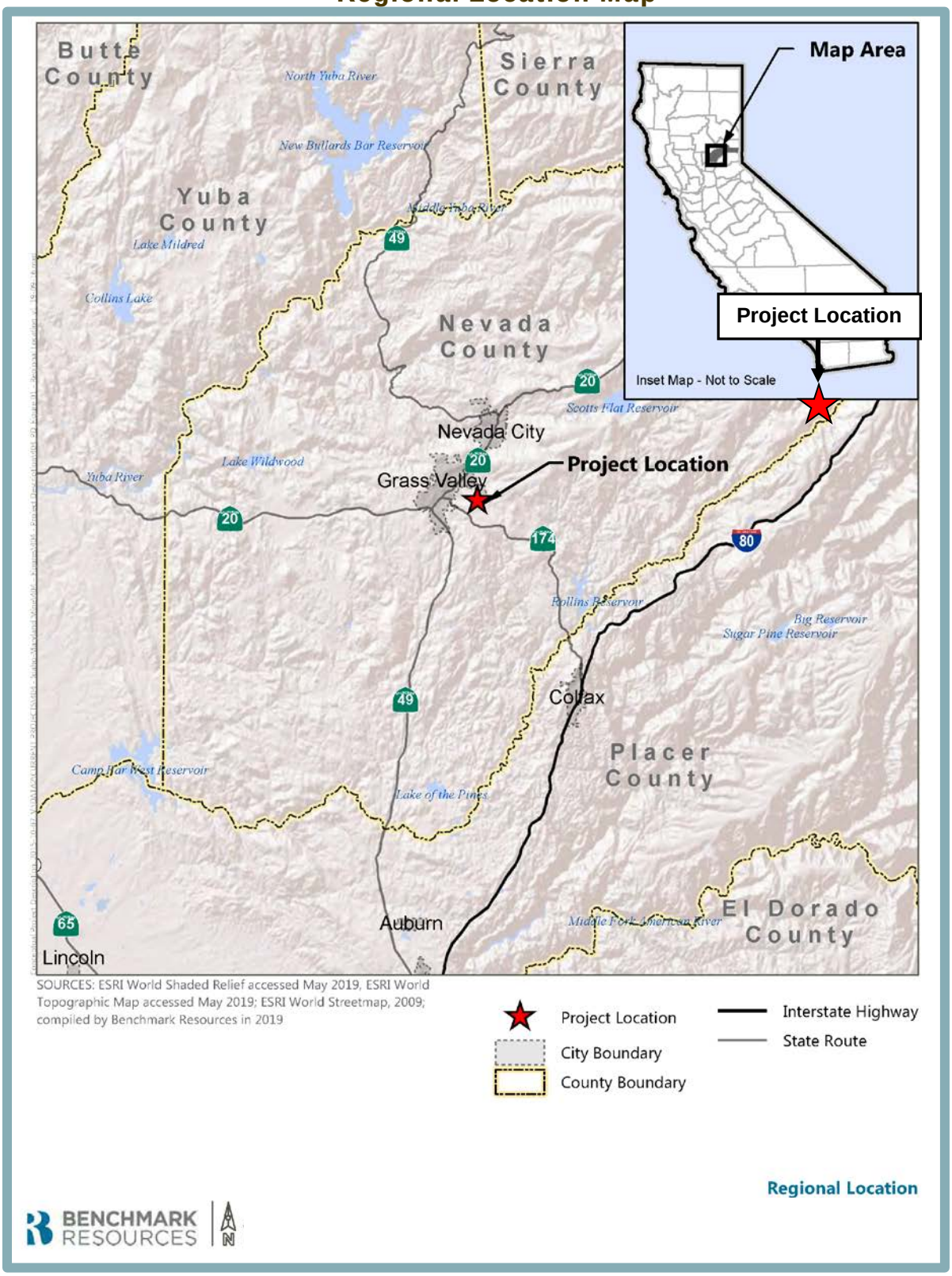


Figure 3-2
Project Location Map - Overview

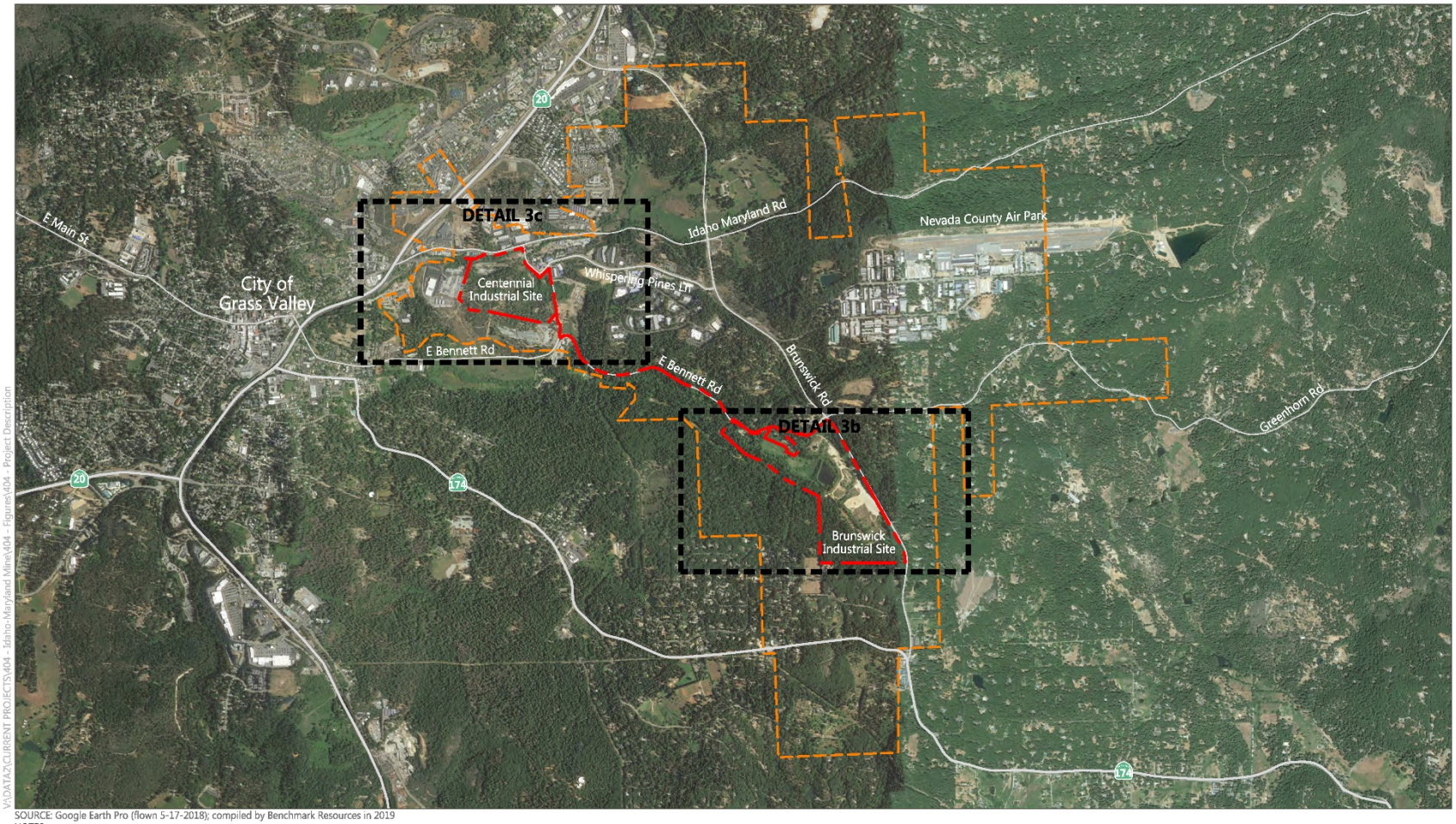


Figure 3-3
Project Location Map – Brunswick Industrial Site

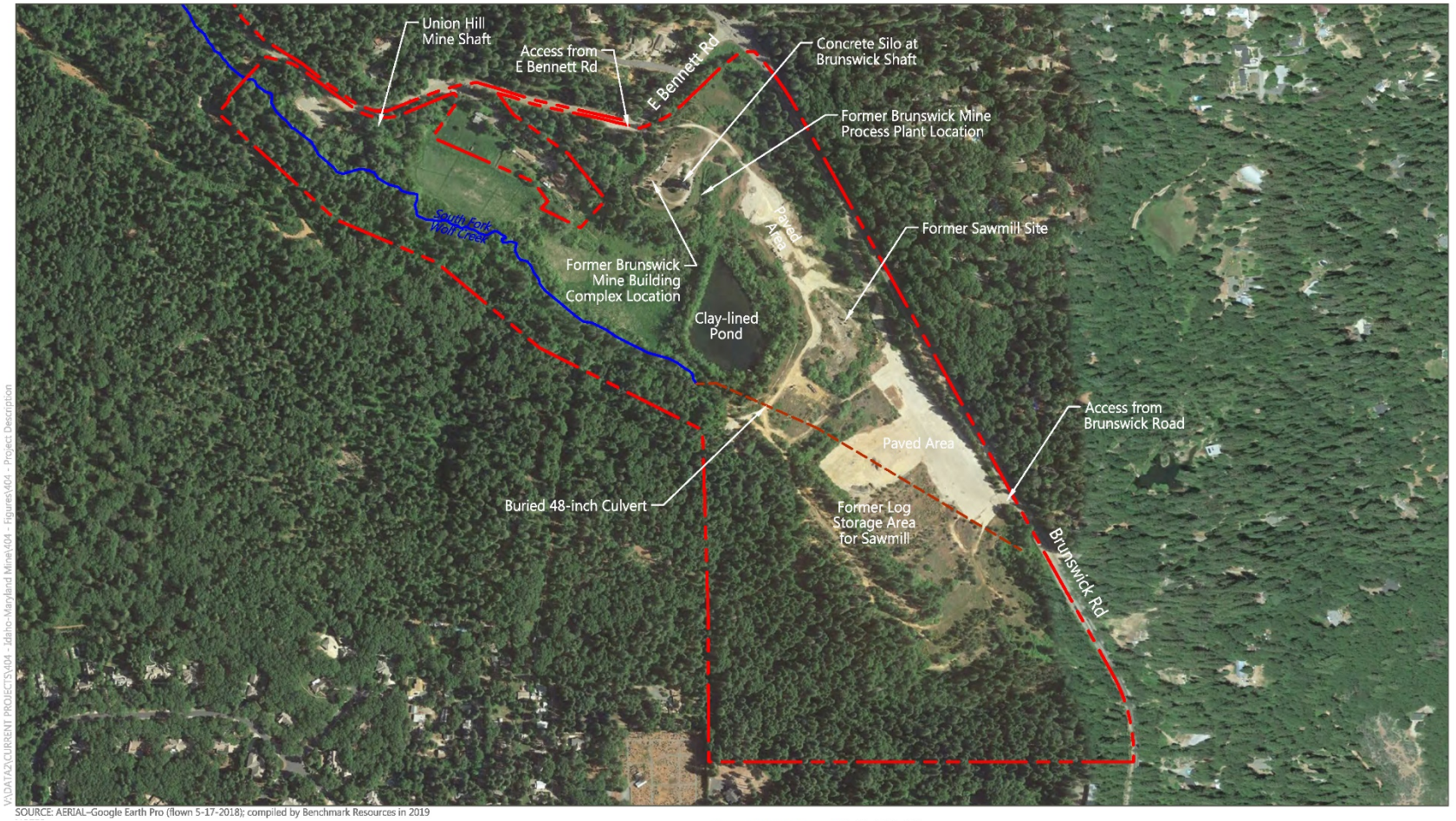
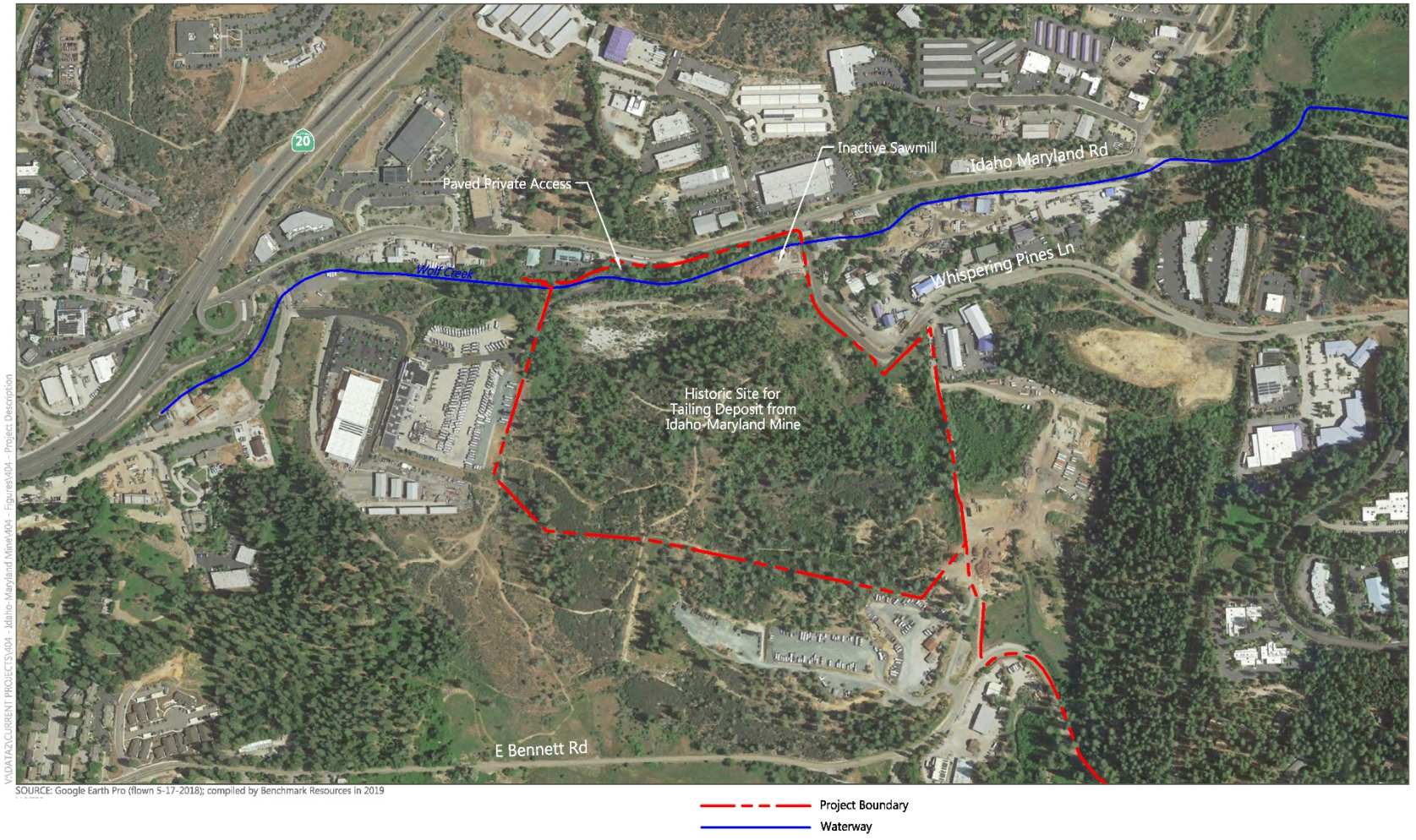


Figure 3-4
Project Location Map – Centennial Industrial Site



The Idaho-Maryland Mine has three distinct sections (Idaho #1, Idaho #3, and Brunswick Mines), which are connected by underground workings. The Union Hill Mine is a smaller mine that was closed in 1918 and has been flooded with groundwater since then. The Union Hill Mine is not connected to the Idaho-Maryland Mine, but is near the Brunswick portion of the Idaho-Maryland Mine. The gold-quartz veins of the Union Hill Mine are believed to be part of the Brunswick vein system. Rise is proposing to dewater the Idaho-Maryland Mine, but not the Union Hill Mine.

A sawmill previously operated on the Brunswick Industrial Site and closed in 1991. All buildings related to the sawmill have been removed A clay-lined constructed pond and significant paved areas remain from the sawmill operation.

In 1995, in an effort to reopen the Idaho-Maryland Mine, Emgold Mining Corporation acquired a Use Permit from Nevada County to dewater the mine. This permit was allowed to expire and work was not completed on the dewatering project. In 2005, Emgold submitted an application to the City of Grass Valley to annex to the City and dewater the Idaho-Maryland Mine and restart mining and processing operations.

Between 2005 and 2011, the City of Grass Valley implemented environmental review of the application consistent with CEQA. Emgold subsequently withdrew the annexation and Use Permit application.

It should be noted that the Centennial Industrial Site was historically used by the Idaho-Maryland Mine to deposit mine tailings. Such mine tailings were never compacted. Some of the materials used to build the tailings berm and small quantities of mineralized rock contain elevated metals. As a result, under existing conditions, the majority of the Centennial Industrial Site cannot be developed because of unstable soils and/or contamination.

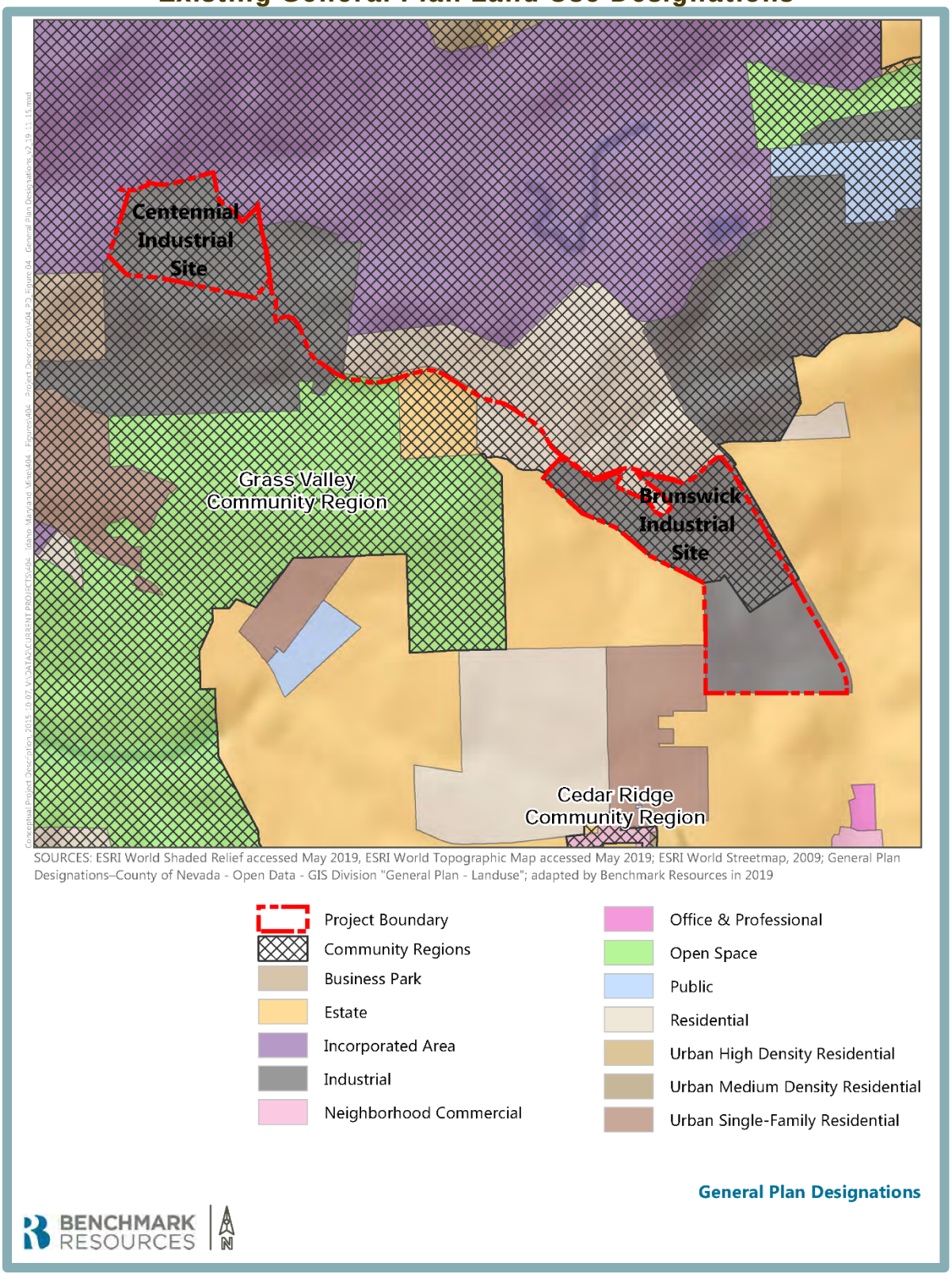
Currently, the project applicant is working with the California Department of Toxic Substances Control (DTSC) to develop a plan to consolidate and cap the contaminated soils in a manner consistent with current federal and State regulations. Under the plan, the project applicant will use the engineered fill to fill and grade the Centennial Industrial Site. The environmental cleanup work at the Centennial Industrial Site will be completed under the DTSC voluntary cleanup program and is not a component of the proposed project. Additional detail regarding existing contamination issues is provided in Chapter 4.7, Hazards and Hazardous Materials, of this EIR.

3.5 PROJECT SETTING AND SURROUNDING LAND USES

The Brunswick and Centennial Industrial Sites consist primarily of open space, with remnants of the previous gold mining and sawmill operations still located on-site. The project sites are both designated Industrial (IND) pursuant to the Nevada County General Plan (see Figure 3-5). The Brunswick Industrial Site is zoned Light Industrial with a Site Performance Combining District (M1-SP) (see Figure 3-6). The Centennial Industrial Site is zoned Light Industrial (M1) (see Figure 3-6).

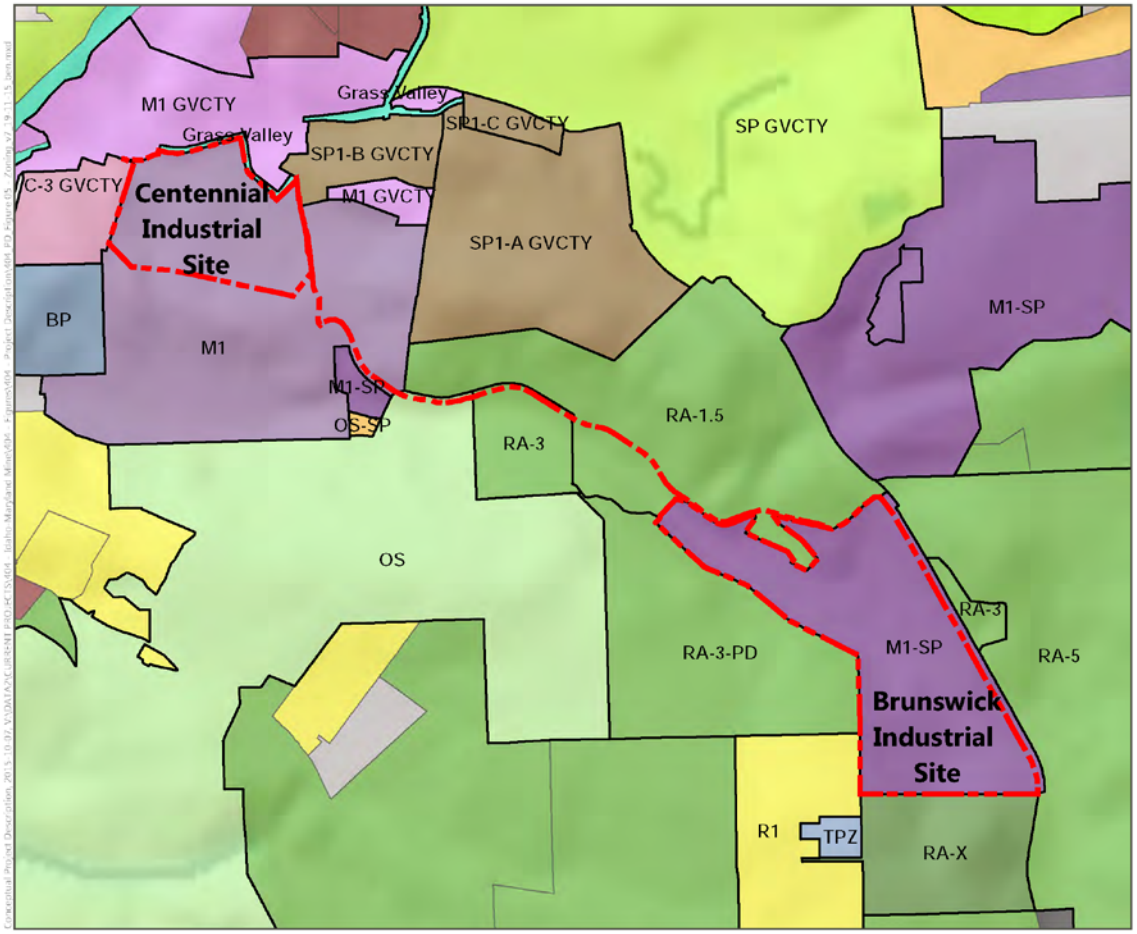
The terrain of the open space portions of the project sites is typical of the lower Sierra Nevada foothills, varying between flat ridges and valleys to gently and moderately sloping hillsides. The project sites are located between the main stem of Wolf Creek and South Fork Wolf Creek and are dominated by mixed hardwood-conifer forests with smaller areas of riparian woodland and scrub, chaparral, wetlands, and annual grassland. Vegetation communities present within the sites are discussed in further detail in Chapter 4.4, Biological Resources, of this EIR.

Figure 3-5
Existing General Plan Land Use Designations



SOURCES: ESRI World Shaded Relief accessed May 2019, ESRI World Topographic Map accessed May 2019; ESRI World Streetmap, 2009; General Plan Designations–County of Nevada - Open Data - GIS Division "General Plan - Landuse"; adapted by Benchmark Resources in 2019

Figure 3-6
Existing Zoning Designations



SOURCES: ESRI World Shaded Relief accessed May 2019, Zoning–County of Nevada - Open Data - GIS Division "Zoning Districts" (10-17-2018); Nevada County Zoning Ordinance (Article 2; Section L-II 2.1 Establishment of Zoning Districts); adapted by Benchmark Resources in 2019

NOTES:

1. "GVCTY" refers to City of Grass Valley Zoning Ordinance descriptions.
2. Zoning descriptions pulled from "ZONEDETAIL" field attributes for areas under Nevada County Zoning Ordinance; descriptions pulled from "ZONETYPE" field attributes for areas under City of Grass Valley Zoning Ordinance.
3. Labels pulled from "ZONECODE" filed with some labels combined in legend for simplicity.

- Project Boundary
- BP—Business Park
- C-3 GVCTY—Heavy Commercial GVCTY
- Grass Valley
- M1—Light Industrial
- M1 GVCTY—Light Industrial GVCTY
- M1-SP—Light Industrial, Site Performance Combining District
- OS—Open Space
- OS-SP—Open Space, Site Performance Combining District
- R1—Single-Family Residential
- RA-(1.5;3;3-PD;5)—Residential Agricultural
- RA-X—Residential Agricultural, Subdivision Limitation Combining District
- SP GVCTY—Specific Plan GVCTY
- SP1-(A;B;C) GVCTY—Whispering Pines Specific Plan
- TPZ—Timberland Production Zone

Zoning

BENCHMARK RESOURCES

As discussed in Section 3.4 above, underground gold mining occurred below the majority of the project sites, while aboveground portions of the sites were used for various gold mining and processing activities. Portions of the Centennial Industrial Site were used to deposit mine tailings and have naturally revegetated. Several shaft entrances are located on the Brunswick Industrial Site, including the Brunswick and Union Hill shafts. The shafts are covered to prevent inadvertent access. Other portions of the site include graveled or paved areas from previous land uses.

Surface drilling on the Brunswick Industrial Site is an allowed use pursuant to the subject sites per the site's M1-SP zoning designation. Exploration drilling is allowed pursuant to Nevada County Land Use and Development Code, Section L-II 3.22.D.2 – Surface Mining Permits and Reclamation Plans. Since 2018, Rise has been conducting exploration drilling to characterize underground resources in anticipation of future mining. Core from the drilling is logged and samples are analyzed off-site.

The project sites are surrounded by undeveloped open space, industrial, low-density residential developments, and commercial uses. Existing land uses surrounding the Centennial Industrial Site include commercial uses and the City of Grass Valley limits to the north, west, and east, and industrial uses to the north, south, and east. Existing land uses surrounding the Brunswick Industrial Site include low-density residences to the north, west, south, and east, industrial uses to the north, open-space to the west and south, and South Fork Wolf Creek to the west.

Table 3-2 below provides a summary of the locations of the surrounding land uses and the receptors closest to the project site.

Table 3-2
Surrounding Land Uses and Closest Receptors

Direction	Land Use	Zoning	Closest Land Use
Brunswick Industrial Site			
North	East Bennett Road, low-density residential, industrial	Residential Agriculture (RA-1.5)	Residential
West	Open space, low-density residential, South Fork Wolf Creek	Residential Agriculture (RA -3-PD)	Residential
South	Open space, low-density residential	Single-Family Residential (R-1) and Residential Agriculture (RA-X)	Residential
East	Brunswick Road, open space, low-density residential	Residential Agriculture (RA-3) and Residential Agriculture (RA-5)	Residential
Centennial Industrial Site			
North	Grass Valley city limits, commercial, industrial, Idaho-Maryland Road	GVCTY – Commercial/Industrial (M-1 GVCTY)[1], GVCTY – Special Districts (SP1-B GVCTY)	Commercial/Industrial
West	Grass Valley city limits, commercial	GVCTY – Commercia/Industrial (C-3 GVCTY) and Business Park (BP)	Commercial

South	Open space, East Bennett Road, industrial	Light Industrial (M1) and Open Space (OS)	Industrial
East	Grass Valley city limits, Centennial Drive, industrial, commercial	GVCTY – Special Districts (SPA1-A GVCTY)	Industrial/Commercial
1. GVCTY is in reference to the zoning designations for land within the Grass Valley city limits.			

3.6 PROJECT OBJECTIVES

The following objectives have been developed by the project applicant for the proposed project:

- Construct a commercially viable, financeable, major underground gold mine operation that will produce 1,000 tons per a day (365,000 tons per year) of gold mineralization.
- Locate the project on property that Rise Grass Valley, Inc. owns that provides an existing access to the underground workings.
- Utilize existing underground access points to limit new aboveground and underground surface disturbance.
- Locate the facilities necessary to support dewatering, mining, and processing on land historically disturbed and zoned for similar industrial type uses.
- Locate the majority of project facilities within a large property holding to provide buffer areas and minimize the potential for adverse environmental effects on neighboring properties.
- Provide property owners along East Bennett Road, an area currently with no service from the Nevada Irrigation District (NID) and using groundwater from wells, a reliable and clean potable water source from the NID.
- Provide jobs that provide a fair living wage for educated and skilled workers.
- Rehabilitate and reclaim the Centennial Industrial Site to allow its future use as industrial land.
- Increase the usable land area at the Brunswick Industrial Site to allow its future use as industrial land.
- Minimize impacts to wetlands, vernal pools, and other special-status species habitat located on the property and, to the extent feasible, mitigate any such impacts identified.

3.7 PROJECT COMPONENTS

The proposed project would reinitiate underground mining and gold mineralization processing for the Idaho-Maryland Mine over an 80-year permit period. Following completion of mining and processing activities, the project sites would be reclaimed to open space and industrial uses. The following sections provide an overview of the following project components:

- Dewatering the underground mine workings;
- Aboveground facilities construction and operations;
- Industrial pad development;
- Potable water pipeline;
- Other operational details; and
- Reclamation Plan.

The majority of aboveground facilities, the access to the underground mining, the treated-water outfall structure, and a portion of the engineered fill would be located on the Brunswick Industrial Site. The approximately 29-acre aboveground area would provide all the facilities and infrastructure necessary to support dewatering, underground mining, gold mineralization and rock

processing, and loading and transport off-site. An aboveground pipe would convey treated water from the water treatment facility along an existing road to the planned discharge point at South Fork Wolf Creek. The pipe and discharge point are located entirely within the property boundaries. Engineered fill will be placed on approximately 31 acres of the Brunswick Industrial Site to create a level pad of approximately 21 acres for future industrial use. In total, up to approximately 60 of the 119-acre site could be subject to surface disturbance and/or development for the aboveground facilities and fill placement. The remaining 59 acres would remain as open space and would not be subject to surface disturbance or infrastructure improvements. Figure 3-7 and Figure 3-8 provide an overview of the proposed site improvements at the Brunswick Industrial Site.

Engineered fill would also be placed on the Centennial Industrial Site. Engineered fill would be transported by truck from the Brunswick Industrial Site and placed on approximately 44 acres of the Centennial Industrial Site to create approximately 37 acres for future industrial use. The remaining approximately 12 acres would remain as a private driveway for site access and open space. The open space area will include Wolf Creek, a 100-foot setback for riparian area on Wolf Creek, and an undisturbed zone containing special status plant species. Figure 3-9 provides an overview of the proposed site improvements at the Centennial Industrial Site.

Of the total 175 acres included in the project sites, approximately 104 acres would be disturbed as a result of construction of the facilities proposed to support dewatering, mining, and processing at the Idaho-Maryland Mine.

Dewatering

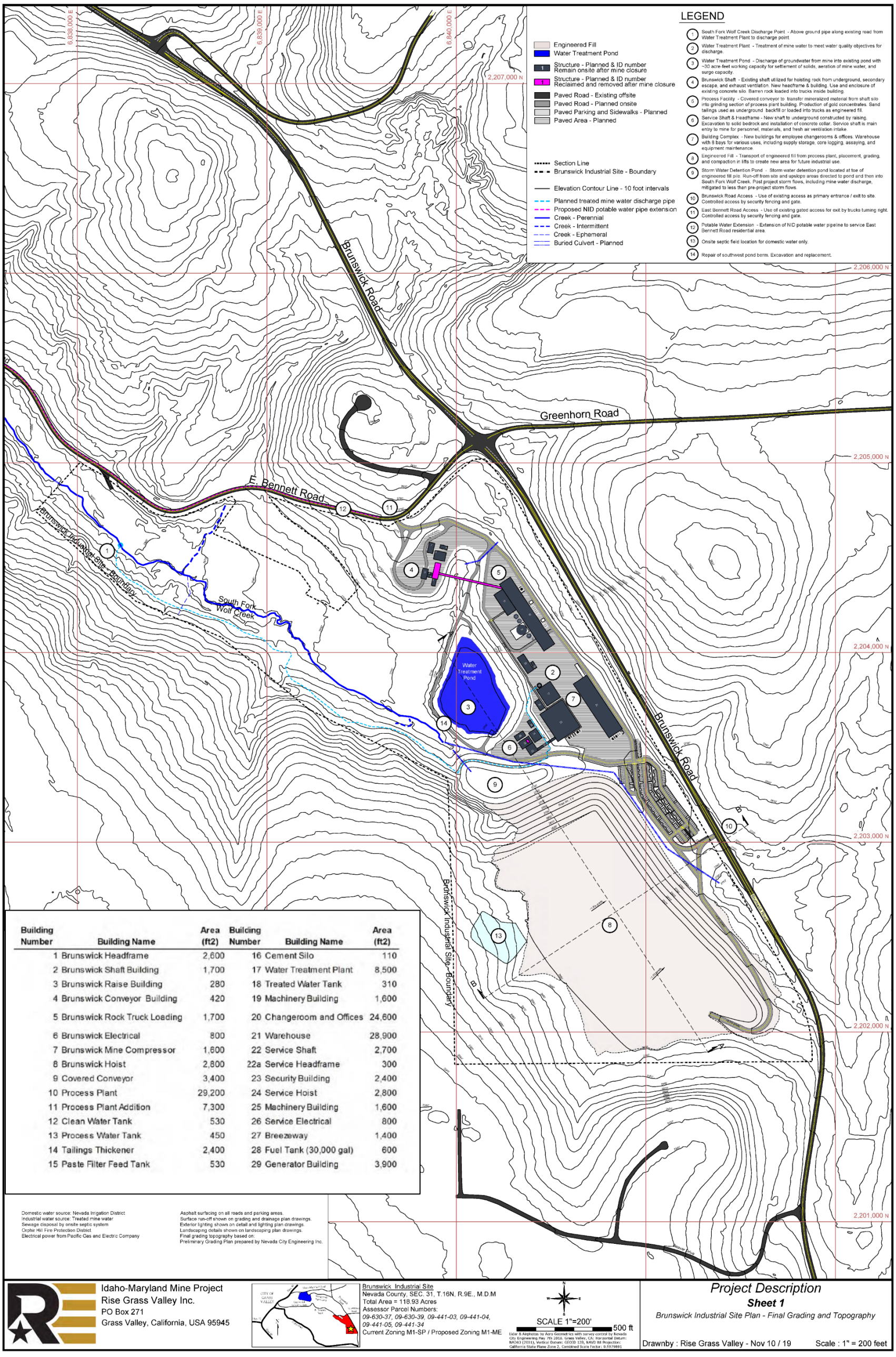
The Idaho-Maryland Mine would be dewatered using the Brunswick shaft to access the underground workings. The dewatering process and aboveground facilities necessary to support dewatering are explained in the following sections.

Initial Mine Dewatering Process

The existing Brunswick shaft located on the northeast side of the Brunswick Industrial Site will provide access to the underground workings for dewatering. Currently, groundwater has filled the underground workings to approximately 260 feet below ground surface, measured at the Brunswick Shaft. The groundwater would need to be removed to access the underground workings for mining.

Initial dewatering of the underground workings would be accomplished using submersible and staged centrifugal pumps. The submersible pump gradually pumps water out of the shaft through a pipeline at a rate of approximately 5.6 cubic feet per second (cfs), or 2,500 gallons per minute (gpm). Approximately 2,500 acre-feet of groundwater would be pumped from the underground workings over an approximately six-month period. The groundwater would be pumped through a new pipeline to an existing clay-lined settling pond for water treatment. The clay-lined pond has a total capacity of approximately 40 acre-feet.

Figure 3-7
Grading Plan – Brunswick Industrial Site



Building Number	Building Name	Area (ft2)	Building Number	Building Name	Area (ft2)
1	Brunswick Headframe	2,600	16	Cement Silo	110
2	Brunswick Shaft Building	1,700	17	Water Treatment Plant	8,500
3	Brunswick Raise Building	280	18	Treated Water Tank	310
4	Brunswick Conveyor Building	420	19	Machinery Building	1,600
5	Brunswick Rock Truck Loading	1,700	20	Changeroom and Offices	24,600
6	Brunswick Electrical	800	21	Warehouse	28,900
7	Brunswick Mine Compressor	1,600	22	Service Shaft	2,700
8	Brunswick Hoist	2,800	22a	Service Headframe	300
9	Covered Conveyor	3,400	23	Security Building	2,400
10	Process Plant	29,200	24	Service Hoist	2,800
11	Process Plant Addition	7,300	25	Machinery Building	1,600
12	Clean Water Tank	530	26	Service Electrical	800
13	Process Water Tank	450	27	Breezeway	1,400
14	Tailings Thickener	2,400	28	Fuel Tank (30,000 gal)	600
15	Paste Filter Feed Tank	530	29	Generator Building	3,900

Domestic water source: Nevada Irrigation District
Industrial water source: Treated mine water
Sewage disposal by onsite septic system
Orphir Hill Fire Protection District
Electrical power from Pacific Gas and Electric Company

Asphalt surfacing on all roads and parking areas.
Surface run-off shown on grading and drainage plan drawings.
Exterior lighting shown on detail and lighting plan drawings.
Landscaping details shown on landscaping plan drawings.
Final grading topography based on:
Preliminary Grading Plan prepared by Nevada City Engineering Inc.

Idaho-Maryland Mine Project
Rise Grass Valley Inc.
PO Box 271
Grass Valley, California, USA 95945

Brunswick Industrial Site
Nevada County, SEC. 31, T.16N, R.9E., M.D.M
Total Area = 118.93 Acres
Assessor Parcel Numbers:
09-630-37, 09-630-39, 09-441-03, 09-441-04, 09-441-05, 09-441-34
Current Zoning M1-SP / Proposed Zoning M1-ME

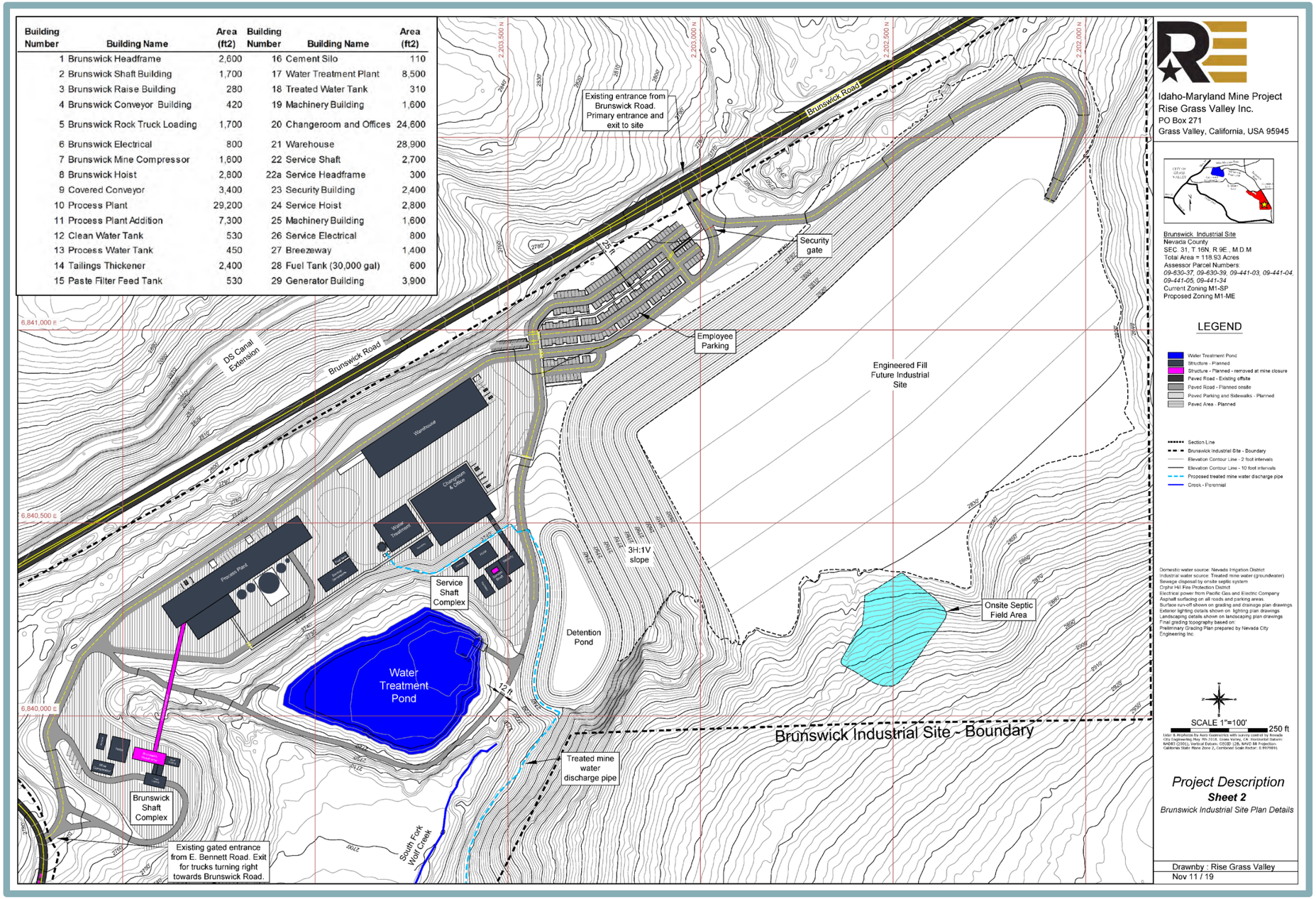
SCALE 1"=200'
500 ft

Lidar & Airphotos by Aera Geometrics with survey control by Nevada City Engineering May 7th 2018. Grass Valley, CA: Horizontal Datum: NAD83 (2011), Vertical Datum: GEOID 12B, NAVD 88 Projection: California State Plane Zone 2, Combined Scale Factor: 0.9979891

Project Description
Sheet 1
Brunswick Industrial Site Plan - Final Grading and Topography

Drawnby : Rise Grass Valley - Nov 10 / 19 Scale : 1" = 200 feet

Figure 3-8
Site Plan – Brunswick Industrial Site



Building Number	Building Name	Area (ft2)	Building Number	Building Name	Area (ft2)
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15	Paste Filter Feed Tank	530	29	Generator Building	3,900

Idaho-Maryland Mine Project
Rise Grass Valley Inc.
PO Box 271
Grass Valley, California, USA 95945

Brunswick Industrial Site
Nevada County
SEC. 31, T.16N, R.9E., M.D.M
Total Area = 118.93 Acres
Assessor Parcel Numbers:
09-630-37, 09-630-39, 09-441-03, 09-441-04, 09-441-05, 09-441-34
Current Zoning M1-SP
Proposed Zoning M1-ME

LEGEND

- Water Treatment Pond
- Structure - Planned
- Structure - Planned - removed at mine closure
- Paved Road - Existing offsite
- Paved Road - Planned onsite
- Paved Parking and Sidewalks - Planned
- Paved Area - Planned
- Section Line
- Brunswick Industrial Site - Boundary
- Elevation Contour Line - 2 foot intervals
- Elevation Contour Line - 10 foot intervals
- Proposed treated mine water discharge pipe
- Creek - Perennial

Domestic water source: Nevada Irrigation District
Industrial water source: Treated mine water (groundwater)
Sewage disposal by onsite septic system
Orghir Hill Fire Protection District
Electrical power from Pacific Gas and Electric Company
Asphalt surfacing on all roads and parking areas.
Surface run-off shown on grading and drainage plan drawings
Exterior lighting details shown on lighting plan drawings
Landscaping details shown on landscaping plan drawings
Final grading topography based on:
Preliminary Grading Plan prepared by Nevada City Engineering Inc.

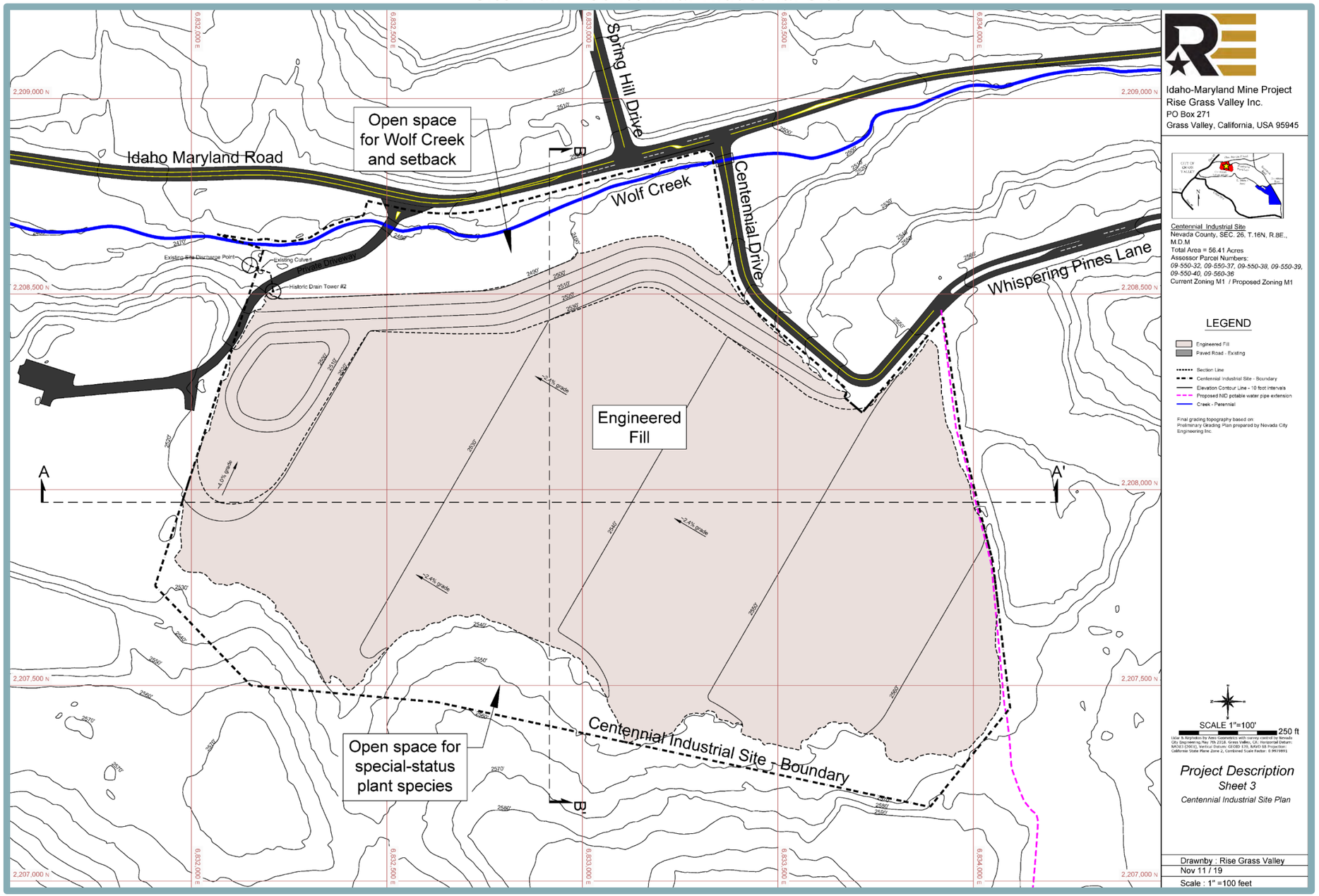
SCALE 1"=100' 250 ft

Units: ft Alignment by Aero Geoservices with survey control by Nevada City Engineering, Nov. 7th 2018, Grass Valley, CA. Horizontal Datum: NAD83 (2001), Vertical Datum: GEOID 12B, NAVD 88 Projection: California State Plane Zone 2, Combined Scale Factor: 0.9979893

Project Description
Sheet 2
Brunswick Industrial Site Plan Details

Drawnby : Rise Grass Valley
Nov 11 / 19

Figure 3-9
Site Plan – Centennial Industrial Site



A headframe and hoist at the Brunswick shaft would be installed before initial dewatering begins. Ventilation would be provided by a fan located on the surface and ducting into the Brunswick shaft until the service shaft is complete and the permanent underground ventilation fan can be installed.

Water Treatment

Groundwater sampling has identified two constituents of concern, iron and manganese, above State discharge standards. As described above, groundwater will be pumped from underground workings to the existing 40-acre-foot, clay-lined settling pond. The settling pond would be used for water storage and removal of total suspended solids. An aeration system would be installed in the settling pond to oxygenate the water, which would precipitate (i.e., create a solid from a solution) a significant portion of dissolved iron. Water would then be pumped to the proposed water treatment plant and filtered to remove the remaining iron and manganese.

Settled solids and precipitated iron and manganese would be contained in the clay-lined settling pond, which would be removed approximately every 10 years. The solids removed from the pond would be hauled to an appropriate and approved landfill off-site. The water treatment plant would be designed to allow for contingencies and alternative treatments to remove other constituents of concern or adjust the pH of the water, if necessary.

Treated Water Pipeline and Outfall

Treated groundwater from the proposed water treatment plant would be pumped through a new aboveground pipeline along an existing access road on the property to a new outfall located adjacent to South Fork Wolf Creek. Figure 3-7 shows the treated water pipeline route and approximate location of the outfall structure. All discharges from the water treatment plant will be discharged into South Fork Wolf Creek per the requirements of the Central Valley Regional Water Quality Control Board (CVRWQCB), National Pollutant Discharge Elimination System (NPEDES), Number CAG995002. The water discharged into South Fork Wolf Creek is expected to be at least as good or better quality than the water typically flowing through South Fork Wolf Creek.

The treated water pipeline would cross a Pacific Gas and Electric Company (PG&E) power distribution line and a Nevada Irrigation District (NID) water line easement. At the easement location, the treated water pipeline would be placed in a manner allowing maintenance vehicles to pass over the pipe, and also allow the pipe to be decoupled and moved easily for maintenance.

Operational Dewatering

Groundwater is anticipated to continue to infiltrate the underground workings at a rate of approximately 1.9 cfs (850 gpm) once dewatering is complete. The permitted discharge of 5.6 cfs would provide flexibility to meet the operational requirements for continuous mine dewatering throughout the mine's operation. Operational dewatering during exploration and mining will require the use of centrifugal pumps and sumps at specific elevations during the production life of the mine. Similar to the initial dewatering effort, although at a reduced quantity, groundwater would be pumped to the surface and settling pond though a pipe for water treatment.

Underground Mining

Exploration and mining of the underground workings would begin once dewatering is complete. Exploration and mining would occur 24 hours a day, seven days a week. A detailed description of such activities is provided in the following sections.

Exploration

Underground exploration would take place after mine dewatering is complete and throughout the life of the mine. Exploration would be done primarily with diamond core drilling throughout the mine area. Exploration would produce core samples that would be brought to the surface for analysis to determine future mining areas.

Mine Development (Tunneling)

To provide access to the gold mineralization, an extensive network of tunnels and raises would be constructed throughout the life of the mine. The tunnels would be constructed in the nonmineralized rock which, at the mine, is typically meta-andesite volcanic rock. The tunnels would be constructed in 10-foot advances per blast (a "round"). A number of parallel holes would be drilled into the rock face, loaded with explosives, and then detonated to fragment the rock. The broken rock would be moved to the surface, the tunnel would be supported with rock bolts and screen, and then the process would start again to continue advancing the tunnel. A number of tunnels would be under construction throughout the mine area at all times during the life of the mine. Explosives to be used would include ammonia nitrate fuel oil (ANFO) and packaged or bulk emulsion explosives. Explosives are transported to the site from the manufacturer and then immediately moved and stored underground in secure explosive magazines.

New underground tunnels and raises would be created as necessary to access gold-quartz veins or provide the necessary underground infrastructure to transport rock and provide ventilation and escape routes. The location, size, and depth of new underground workings would depend on surface and underground drilling and mineral testing. New underground workings, except for the service shaft and new ventilation raise, would be below 500 feet of the ground surface. All underground workings would remain within the boundaries of the project applicant's existing underground mineral rights, shown in Figure 3-2.

Mine development in nonmineralized "barren" rock (i.e., non-gold bearing) is expected to result in the production of approximately 500 tons per day (182,500 tons per year) of barren rock. The barren rock would be transported from the tunnel face to the mine shaft (using electric or diesel-powered load/haul/dump vehicles, rail cars, and/or conveyors) to underground rock bins located adjacent to the shaft. The rock would then be loaded into the shaft skips, hoisted to the surface, and dropped into one of the compartments of the concrete silo located on the surface. The barren rock will then be transported by trucks on the surface for use as engineered fill.

Gold Mineralization Production (Tunneling and Production Blasting)

Generally, mining of a block of gold mineralization begins by creating horizontal tunnels along the length of a gold-quartz vein, using similar techniques as described in the previous section. Horizontal tunnels are created through the body of mineralization on vertical spacing of approximately every 50 feet. Once the tunnels are completed, a pattern of drill holes are drilled between the two levels. The long holes are then loaded with explosives and detonated to fragment the mineralized rock so that the rock can be transported to the shaft and then to the surface.

Gold mineralization production through tunneling and long-hole blasting as part of the proposed project is anticipated to produce 1,000 tons per a day (365,000 tons per year) of mineralized material. Approximately 50 percent of the mineralization would be returned to the underground mine as backfill after processing, and the remainder would be used for engineered fill.

Backfill

Mining of gold-quartz veins creates voids that will be filled as mining progresses to ensure the stability of the underground workings. Sand tailings produced by mineral processing on the surface will be blended with cement and water and pumped back into the mine to backfill mined voids. Approximately 50 percent of the sand tailings (500 tons per day) would be placed underground as cemented paste fill.

Aboveground Facilities Construction and Operations

To support the proposed dewatering and underground mining, aboveground structures and processing facilities would need to be constructed. As shown in Figure 3-7 and Figure 3-8, approximately 15 acres of previously disturbed land on the northeast side of the Brunswick Industrial Site would be graded to construct the ventilation system, headframe and hoist, water treatment plant, collar replacement, mineral processing plant, service shaft, various buildings, internal roads, and parking areas. Site grading would create a flat pad with a 1- to 2- percent grading toward a storm drain system and detention pond to collect sheet flow. Areas would be covered with asphalt or concrete as necessary to support facilities construction. The Brunswick Industrial Site currently has approximately nine acres of impervious asphalt paving from previous land uses. Some of the existing asphalt areas would be removed and some would be reused. After completion of construction, the impervious surfaces and buildings would cover a total of approximately 15 acres of the Brunswick Industrial Site. The following sections provide a description of the aboveground facilities to be constructed and their operation.

Brunswick Shaft Entrance Improvements

The following provides a description of improvements associated with the Brunswick shaft entrance.

Collar Replacement and Shaft Refurbishment

The Brunswick shaft is currently covered and would require improvements before installation of ventilation, a headframe and hoist system, and associated infrastructure (e.g., power lines, dewatering pipes, communications) to support underground exploration and mining. The existing concrete collar, which extends through the overburden (soil and weathered rock) from surface to solid bedrock, would be replaced with a new concrete collar to approximately 40 feet below ground surface. In addition, because groundwater is currently approximately 260 feet below the ground surface, many of the timbers above the groundwater level supporting the shaft are anticipated to have suffered rot and would need to be replaced. Timbers would be replaced with new timbers or similar engineered support structures. As dewatering occurs and additional timbers are exposed, timbers would be replaced as necessary.

Ventilation Raise and Exhaust System

The Brunswick shaft would be used as the return air or exhaust for the mine. To allow sufficient air flow, a second shaft would be constructed adjacent to the Brunswick shaft from the surface to 580 feet deep. This shaft would be constructed by raise boring upward from 580 feet underground, and not by blasting, to ensure the existing shaft is not damaged. A building over the new ventilation raise and the Brunswick shaft would direct exhaust mine ventilation air up through the headframe, where exhaust air would exit at a height of approximately 165 feet aboveground.

The combined shafts would be sized to allow a total mine ventilation capacity of approximately 200,000 cubic feet per minute (cfm). Ventilation is necessary to provide fresh air for underground workers and disperse equipment emissions.

Underground Support Systems Infrastructure

As initial dewatering exposes the underground workings, but before underground mining operations begin, a variety of support systems would be installed to ensure safe and consistent underground mining operations. A ventilation system would be installed to provide fresh air from aboveground to workers underground. Aboveground facilities necessary to support pumping of fresh air underground include a primary ventilation fan and duct work. The primary ventilation fan would have housing on its sides and a silencer to reduce noise levels. The front of the ventilation fan would have a vent connected to duct work that would carry air underground. In addition, secondary fans would be installed underground to promote air circulation. The ventilation system would be electric.

Once the service raise is completed and the permanent ventilation system is constructed, the primary ventilation fans would be located underground and the temporary ventilation fan on the surface at the Brunswick shaft would be removed. In addition, a variety of cables and pipes would be needed to transport electrical power, compressed air, and service water underground. Electrical power would be provided by a line power substation and/or aboveground generator to support underground lighting, electrical mobile equipment, and other infrastructure. Aboveground compressors would supply compressed air, which would power tools and equipment.

Hoist and Headframe

Installation of a new hoist and headframe would be necessary to support the transport of employees, supplies, barren rock, and mineralized rock to the surface once the underground workings have been dewatered. The proposed approximately 165-foot-high headframe would be a structural support that would be constructed out of steel above the Brunswick shaft and enclose the existing concrete silo. The headframe would support the cable(s) that would be connected to the hoist on one end and the mine cage and skips on the other end. The headframe and silo would be enclosed inside a pre-engineered metal building and the hoist would be housed in a separate pre-engineered building.

Rock Bin Conveyors and Barren Rock Loading Area

The existing concrete rock silo would be reused. The rock silo has two small compartments and one large compartment. A chute and conveyor system would transfer barren rock from the silo into trucks for transport as engineered fill. The conveyor system and truck loading area would be inside a small building adjacent to the headframe. A chute and covered conveyor system, approximately 335 feet long, would transfer gold mineralization from the silo to the process plant.

Service Shaft

A new mine shaft would be developed on the Brunswick Industrial Site (see Figure 3-7 and Figure 3-8). The service shaft may be circular or rectangular, depending on the methods used in its construction. The service shaft would be approximately 1,000 feet southeast of the existing Brunswick shaft and developed to at least 3,280 feet below ground surface. The service shaft would connect to existing underground workings accessible from the Brunswick shaft. The service shaft would be equipped with a hoist and headframe that is approximately 80 feet high to provide movement of workers and materials underground, fresh air ventilation intake, and various services such as compressed air, electricity, and pipes. Barren or mineralized rock removal would not occur from the proposed service shaft. The service shaft would be sized to ventilate approximately 200,000 cfm of fresh air.

The overburden (i.e., soil and weak rock) would be excavated from the surface and a concrete collar installed from the surface profile to the bedrock. The depth to bedrock is approximately 60

feet. The overburden material would be excavated to allow the shaft and concrete collar to be constructed, and then the overburden would be placed and compacted around the concrete collar to the original ground surface elevation.

The proposed service shaft excavation in rock would be constructed from the underground mine workings upward to the surface through a process called 'raising'. The raise excavation could be completed using either mechanical raise boring or Alimak raising:

- **Raise boring** is carried out using a raise bore machine located on the surface. A drill hole is made from the surface to the underground workings. After a cutting head is attached underground to the end of the drill pipe, the raise bore machine pulls the rotating cutting head upward to create a circular excavation in a continuous process.
- **Alimak raising** is carried out using drilling and blasting. The raise is blasted from the bottom upward. Rails are attached to the wall of the raise so that an Alimak raise climber can lift the miners to the working face. An Alimak raise is advanced with each blast in segments of approximately 10 feet. The resulting excavation is rectangular.

Process Plant

Gold mineralization hoisted from the Brunswick shaft would be placed in the existing concrete silo located on the Brunswick property before processing begins (see Figure 3-7 and Figure 3-8). The rock size may be reduced using an underground jaw crusher before rock is hoisted to the surface.

Gold-bearing material would be transported from the concrete silo using chutes and conveyors to a new fully enclosed process plant by a covered conveyor system, approximately 335 in length. Water would be added and the mineralized rock would be ground in grinding mills to size before the gold is recovered. A gravity concentrator in the grinding circuit would recover approximately 70 percent of the gold. The slurry of ground mineralized rock and water that results from this process would be pumped to a second gold recovery system, sulfide flotation, where the remaining recoverable gold is captured in a sulfide mineral concentrate. The majority of sulfide minerals would be recovered in the sulfide mineral concentrate for shipment off-site. Each method would remove gold from the mineralized rock into a concentrate. The gold concentrate would be dewatered using thickeners and filter presses before being bagged for off-site shipment. The gravity gold concentrate may be further concentrated on-site using gravity, water, and a small furnace to create gold doré bars. The processing plant would include common reagents such as collectors, promotors, frothers, and flocculants. Mercury or cyanide would not be used in gold mineral processing. Approximately 20 tons of gold concentrate would be produced and bagged on-site per day.

Sand tailings (waste) from the gold recovery process would be dewatered and used for either backfill for the underground mine or stockpiled for transport and use as engineered fill. Sand tailings during backfilling would be transferred to the paste backfill plant, where the sand would be dewatered and mixed with cement into a paste. The paste would be pumped back underground and used to backfill mining voids. Sand tailings not used for backfill would be either directly loaded into trucks in the process plant or stockpiled inside the building. Stockpiled sand tailings would be loaded into transport trucks with a front-end loader during daytime hours. Sand tailings not used as underground backfill would be transported for use as engineered fill.

The process plant would be contained in a single building, with dimensions of approximately 425 by 70 by 65 feet. A thickener tank and paste feed tank, several water tanks, and cement silo would be located outside and behind the plant building and masked from view of Brunswick Road.

Engineered Fill Transport

Barren rock hoisted from the Brunswick shaft would be placed in the existing concrete silo located on the Brunswick Industrial Site (see Figure 3-7 and Figure 3-8). The barren rock would be transported from the concrete silo using a series of chutes and conveyors to a fully enclosed truck loading building. Barren rock may be mixed with sands from the gold processing system to create an engineered fill that meets appropriate geotechnical specifications for construction of the development pad(s).

Trucks would transport barren rock from the Brunswick Industrial Site to the Centennial Industrial Site or Brunswick Industrial Site engineered fill areas. Transport of barren rock to the Centennial Industrial Site would occur 16 hours per day, seven days per week. An approximately 44-acre area of the 56-acre Centennial Industrial Site would be filled using engineered fill from the Brunswick Industrial Site over approximately five years. Engineered fill would be hauled to either the Centennial site or to off-site construction sites and mining concentrate would be shipped off-site via State Route (SR) 49. Other trucks providing materials and supplies are expected to access the site from both SR 49 and SR 174. The proposed project would include hauling engineered fill to the Centennial site via SR 49/20. The proposed access for the delivery of the engineered fill would be along the west end of Whispering Pines Lane. On the Brunswick Industrial Site, engineered fill would be transported from the truck loading area to an approximately 31-acre portion of the Brunswick Industrial Site (see Figure 3-7 and Figure 3-8). It would take approximately six years to fill the Brunswick Industrial Site fill area to design elevations. Engineered fill produced would also be used in the local and regional construction markets.

Detention Pond, Storm Drains, and Culvert Replacement

Both the Brunswick and Centennial Industrial Sites would include storm water drainage, storage, and conveyance features meeting County requirements. As shown on Figure 3-7 and Figure 3-8, the developed portions of the Brunswick Industrial Site would be graded to drain into storm drain lines. In addition, concrete-lined v-ditches would be constructed at the top and toe of the engineered fill pad. The storm drain lines and v- ditches would transport storm water flows to a detention basin. The detention basin would be designed to accommodate up to a 100-year storm events, and would discharge treated storm water approximately 50 feet upstream of South Fork Wolf Creek. The detention basin would meter flows to ensure that a net increase in the rate or amount of runoff entering the Creek does not occur.

Currently, a buried 48-inch culvert crosses the Brunswick Industrial Site. The culvert transports off-site surface drainage from Brunswick Road. South Fork Wolf Creek originates from the outlet of this 48-inch culvert. As part of the proposed project, the culvert would be upgraded and replaced to avoid the proposed improvements. The new 48-inch culvert would discharge at the same location as the existing 48-inch culvert.

The southwest portion of the water treatment pond berm would be excavated and rebuilt before dewatering commences. The clay liner of the berm may be maintained throughout the life of the project or covered with a geomembrane liner to ensure no seepage from the pond occurs.

Proposed Office, Warehouse, Change Room, and Other Structures

Table 3-3 and Table 3-4 provide the description, size, and height of the proposed buildings and structures to be constructed on the Brunswick Industrial Site. In total, approximately 126,000 square feet of industrial buildings would be constructed on the site. Building use for the calculation of required number of parking spaces pursuant to the Nevada County Code Land Use and

Development Code, Section L-II 4.2.9 can generally be classified as Office (10,100 square feet), General Industrial (50,700 square feet), Manufacturing (51,000 square feet), and Warehouse (14,500 square feet). As shown in Table 3-4, approximately 9,800 square feet of additional structures would be constructed on the Brunswick Industrial Site, including tanks located outside the process and water treatment plants, a fuel tank, a covered conveyor, and a breezeway.

Parking

A total of 217 off-street parking spaces would be provided at the Brunswick Industrial Site (Table 3-5). In addition, the proposed project would include bicycle racks with space for a minimum of 44 bicycles at the Brunswick Industrial Site. Landscaping of parking areas would be designed and constructed in compliance with County regulations.

Table 3-3
Building Summary

Building	Gross Area (square feet)	Maximum Height (feet)
Brunswick Shaft Complex		
Headframe	2,600	165
Shaft building	1,700	25
Conveyor and raise building	700	17
Rock truck loading	1,700	20
Hoist building	2,800	50
Electrical building	800	15
Mine compressor building	1,600	20
Process Plant Area		
Process plant	29,200	64
Process plant addition	7,300	26
Generator building	3,900	20
Warehouse / Office Area		
Warehouse	28,900	27
Changeroom and office building	24,600	30
Water treatment plant	8,500	26
Machinery building	1,600	20
Service Shaft Complex		
Shaft building	2,700	24
Headframe (located in shaft building)	–	80
Hoist building	2,800	50
Electrical building	800	15
Machinery building	1,600	20
Security building	2,400	15

Table 3-4 Other Structures Summary		
Building Height (feet)	**Gross Area (sf)**	**Maximum Height (feet)**
Covered conveyor (Brunswick shaft to process plant)	3,400	35
Breezeway (security building to change room/office)	1,400	11
Process Plant		
Clean water tank	535	30
Process water tank	455	30
Tailings thickener	2,400	34
Paste filter feed tank	535	30
Cement silo	115	40
Water Treatment Plant		
Treated water tank	315	30
Generator Building		
Diesel fuel tank (30,000 gallons)	600	20

Table 3-5 Parking Summary						
Area	**Regular**	**Compact**	**Electric Vehicle (EV)**	**Wheelchair Accessible**	**Wheelchair Van Accessible**	**Total**
Main parking lot	119	56	13	–	–	188
Office and warehouse	5	–	–	6	1	12
Process plant	10	–	–	1	1	12
Brunswick shaft	5	–	–	–	–	5
Total:	**139**	**56**	**13**	**7**	**2**	**217**

Industrial Pad Development

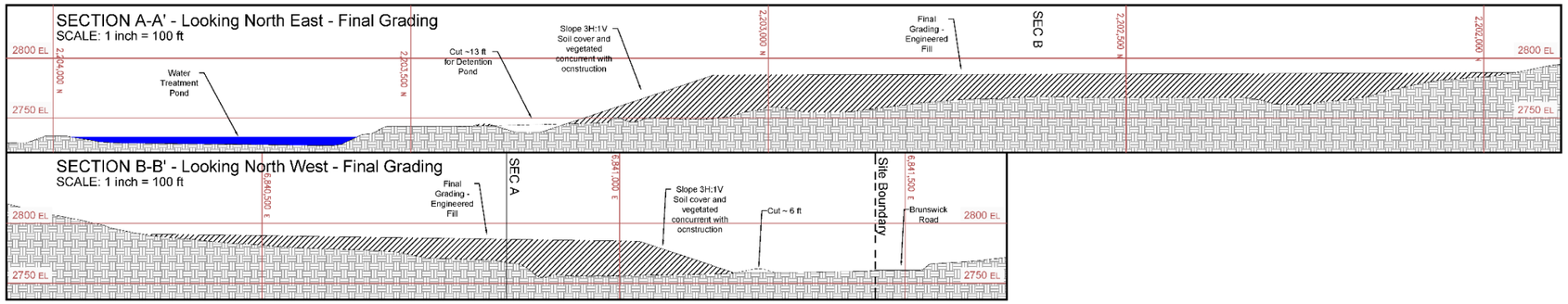
The following sections provide a summary of the proposed industrial pads to be developed on the Brunswick and Centennial Industrial Sites.

Brunswick Industrial Site

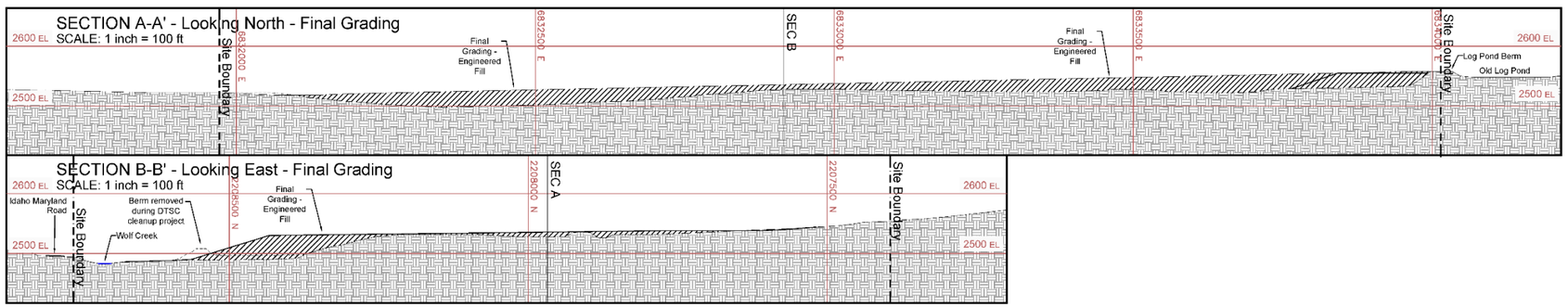
Engineered fill would be transported from the silo and process plant, using haul trucks, to an approximately 31-acre area of the Brunswick Industrial Site for placement (see Figure 3-7 and Figure 3-8). Approximately 2.2 million tons of engineered fill would be placed and compacted over a six-year period. The production and daily transport rate would be the same as described below for the Centennial Industrial Site. Engineered fill would continue to be placed, graded, and compacted in a series of lifts to an elevation ranging between 2,820 and 2,830 mean sea level (approximately 80 feet to 90 feet above ground surface). Fill slopes would be 3:1 (horizontal to vertical) or flatter. Following completion of fill activities, the fill slopes would be revegetated to control erosion and ensure slope stability (see Figure 3-10). The final grading would result in approximately 21 acres of flat developable land on property zoned for industrial uses.

Figure 3-10
Proposed Grading Sections

BRUNSWICK INDUSTRIAL SITE - SECTIONS



CENTENNIAL INDUSTRIAL SITE - SECTIONS



Idaho-Maryland Mine Project
Rise Grass Valley Inc.
PO Box 271
Grass Valley, California, USA 95945

Brunswick Industrial Site
Nevada County
SEC. 31, T.16N, R.9E., M.D.M
Total Area = 118.93 Acres
Assessor Parcel Numbers:
09-630-37, 09-630-39, 09-441-03, 09-441-04, 09-441-05, 09-441-34
Current Zoning M1-SP
Proposed Zoning M1-ME

Centennial Industrial Site
Nevada County, SEC. 26, T.16N, R.8E., M.D.M
Total Area = 56.41 Acres
Assessor Parcel Numbers:
09-550-32, 09-550-37, 09-550-38, 09-550-39, 09-550-40, 09-560-36
Current Zoning M1 / Proposed Zoning M1

LEGEND

- Area of fill excavation planned
- Undisturbed Ground
- Current / original ground surface
- Property Boundary
- Final Ground Surface

Final grading topography based on:
Preliminary Grading Plan prepared by Nevada City Engineering Inc.

SCALE 1"=100'
250 ft

Lidar & Airphotos by Aero Geometrics with survey control by Nevada City Engineering May 7th 2018. Grass Valley, CA: Horizontal Datum: NAD83 (2001), Vertical Datum: GEOID 12B, NAVD 88 Projection: California State Plane zone 2, Combined Scale Factor: 0.99/9892

Centennial Industrial Site

As noted previously, the majority of the Centennial Industrial Site currently cannot be developed due to unstable soils and/or contamination associated with historic deposition of mine tailings on the site. The project applicant is working with the California Department of Toxic Substances Control (DTSC) to develop a plan to consolidate and cap the contaminated soils in a manner consistent with current federal and State regulations, separate from the proposed project.

The environmental cleanup work at the Centennial Industrial Site will be completed under the DTSC voluntary cleanup program. After such environmental cleanup work is completed, as part of the proposed project, engineered fill from the Brunswick Industrial Site would be placed, graded, and compacted on the Centennial Industrial Site. Such engineered fill would be generated as a waste by-product of the gold mining process described above to fill and grade the Centennial Industrial Site. The fill and grading activities would disturb approximately 44 acres of the 56-acre Centennial Industrial Site. The remaining 12 acres would be avoided, including Wolf Creek, a minimum 100-foot setback, and sensitive plant species. Per Section L-II 4.3.17, Watercourses, Wetlands and Riparian Areas, of the Nevada County Land Use and Development Code, a 100-foot setback from the high water mark of perennial streams and watercourse is required for projects located near stream corridors and riparian habitat. Not only would the project avoid ground-disturbance within Wolf Creek, the project would include a 100-foot setback from the floodplain within the Centennial Industrial Site.

As described above, the engineered fill would be transported from the Brunswick Industrial Site to the Centennial Industrial Site using haul trucks. Approximately 1.6 million tons of engineered fill would be trucked from the Brunswick Industrial Site to the Centennial Industrial Site over a five-year period for placement and compaction. The average transport of engineered fill would be 1,000 tons per day or 365,000 tons per year. A maximum transport rate of up to 2,000 tons of engineered fill per day is required to make up for periodic weather or operational delays. Truck payloads would be approximately 20 tons per truck and, therefore, would require up to 100 trips per day and an average of 50 trips per day.

Engineered fill may be mixed on-site using mobile equipment to ensure uniformity and meet specifications for compaction. Engineered fill would continue to be placed, graded, and compacted in a series of lifts to an elevation ranging between 2,520 and 2,570 means sea level (approximately 30 to 70 feet above ground surface). Fill slopes would be 3:1 (horizontal to vertical) or flatter. (see Figure 3-10). Following completion of fill activities, the fill slopes would be revegetated to control erosion and ensure slope stability. The final grading would result in 37 acres of flat developable land on property zoned industrial.

Potable Water Pipeline

A buried potable water pipeline would be constructed as part of the proposed project to provide water to residences along a portion of East Bennett Road. Specifically, the existing NID potable water pipeline would be extended on East Bennet Road to provide potable water service to residences currently on wells that may be affected by the project. Project effects related to groundwater are discussed further in Chapter 4.8, Hydrology and Water Quality, of this EIR.

An approximately 1¼-mile-long by two feet-wide (approximately 0.30-acre) stretch of East Bennett Road would be temporarily disturbed to bury the potable water pipeline. Installation of the buried potable water pipeline would generally involve trenching, pipe placement, backfill, and cover replacement. Initially, an approximately 24-inch- wide by 42-inch-deep open trench would be developed. Excavated asphalt would be disposed of consistent with County regulations and

overburden would be stockpiled for use as backfill. Upon completion of trenching in a specific section of the route, the eight-inch pipeline would be installed. The pipe would be covered with the stockpiled soil removed during trenching or engineered fill, as required by County guidelines. The backfilled trench within the East Bennett Road right-of-way would then be paved consistent with County guidelines.

Residences on the streets of Cordell Court, Miskin Court, Amethyst Court, Emerald Court, Diamond Court, and Old Mine Road and several private driveways would be offered the opportunity to connect to the new potable water line. Residential connection to the new potable water line would be voluntary, and at the property owner's discretion, but at the cost of the project applicant. The pipeline would be installed within the County right-of-way in the streets named and stubbed at the property owner's property boundary, the precise location of which would be included on the Project Improvement plans to be reviewed and approved by the County. If the property owner decides to connect to the potable water line, the project applicant would fund the permitting and construction costs. The potable water pipeline would connect with the main water line on Whispering Pines Lane and Brunswick Road.

Other Operations Details

The following sections provide a summary of the proposed hours of operations and employment; equipment; fuel and equipment maintenance facilities; water supply and other utilities; lighting; access and circulation; site security and fencing; and mine rescue and emergency response.

Hours of Operation and Employment

Hours of operation would vary based on the project element. Table 3-6 provides the hours of operation and approximate duration.

Table 3-6
Hours of Operation

Project Element	Hours of Operation	Duration
Initial dewatering	24 hours a day, 7 days a week	6 months
Aboveground facility outside construction	7:00 AM–7:00 PM, Monday–Saturday	18 months
Aboveground facility inside construction	24 hours a day, 7 days a week	18 months
Aboveground facility operations—gold mineralization processing	24 hours a day, 7 days a week	80 years
Underground exploration/mining	24 hours a day, 7 days a week	80 years
Off-site hauling—gold concentrate	6:00 AM–10:00 PM, 7 days a week	80 years
Off-site hauling—engineered fill	6:00 AM–10:00 PM, 7 days a week	80 years
Outside truck loading by loader	7:00 AM–7:00 PM, 7 days a week	80 years
Placement, grading, and compaction of engineered fill at Brunswick Industrial Site	7:00 AM–3:30 PM, Monday–Friday	6 years
Placement, grading, and compaction of engineered fill at Centennial Industrial Site	7:00 AM–3:30 PM, Monday–Friday	5 years

Note: Durations are approximate and dependent on factors such as equipment and personnel availability, fluctuations in the economy, and technical details.

During project construction, a workforce of approximately 52 persons is estimated. The project applicant anticipates employing approximately 121 workers to support initial underground mining, increasing to approximately 312 direct employees during full operations. At full operations, approximately 44 employees would work regular eight-hour days, five days per week, and approximately 268 employees would work 12-hour shifts, seven days on and seven days off. Shift changes for 12-hour employees would be 7:00 AM and 7:00 PM. Work shifts for eight-hour

employees would be from 7:00 AM to 3:30 PM. Table 3-7 provides the shift and number of employees listed by worker role. Freight deliveries to the Brunswick Industrial Site would be 7:00 AM to 7:00 PM.

Table 3-7
Operations Workforce

Workforce Shift	Shift	Total Employees	Employees per Shift
Management and technical staff	8 hours a day, 5 days a week (dayshift)	36	3 6
Assaying and construction	8 hours a day, 5 days a week (dayshift)	4	4
Underground mine	12 hours a day, 7 days on, 7 days off	202	50
Mineral processing	12 hours a day, 7 days on. 7 days off	64	16
Truck transport of engineered fill	12 hours a day, 7 days on. 7 days off	2	1
Centennial or Brunswick Industrial Site Placement and compaction of engineered fill	8 hours a day, 5 days per week (dayshift)	4	4
	TOTAL WORKFORCE	**312**	**111**

Equipment

Expected equipment associated with the proposed underground mining, water treatment, gold mineralization processing, and engineered fill activities is provided in Table 3-8. The type of vehicles used would vary somewhat over time depending on availability and the introduction of new models to suit different conditions.

Table 3-8
Typical Mining Equipment

Equipment	Uses
Underground Mining Operations	
Jaw crusher	Primary crushing of gold mineralization and barren rock before hoisting to the surface.
Drills	Drill holes for explosives placement and core drilling. Electric-Hydraulic and pneumatic.
Jumbo drill carriages	Wheeled carriers and hydraulic lifts for jumbo drills.
Load/haul/dump vehicles and rail cars	Load barren and mineralized rock. Move mined barren and mineralized rock to rock bins.
Personnel vehicles	Small wheeled vehicles for person transport.
Headframes, hoists, and skips	Hoist barren and mineralized rock to the surface and deposit in concrete silo. Hoist people, materials, and equipment from underground to surface.
Water pumps	Pump water from underground workings to surface for dewatering.
Ventilation fans	Maintain air circulation in the underground workings.
Alimak	Lift for drilling and placing explosives to create raises.
Shotcrete machine	Spray concrete into the walls of the galleries to prevent rockfall.
Explosives loader	Transport and load explosives.
Compressor	Provides compressed air to underground mine.
Water Treatment Plant	
Pressure Vessels	Manganese Dioxide filtration and activated carbon.
Pumps	Transfer of water for treatment and discharge.
Turbine Aerator	Aeration of water in treatment pond.
Mineral Processing Operations	

Table 3-8 Typical Mining Equipment	
Equipment	**Uses**
Conveyor belts	Convey gold mineralization from the concrete storage silo to the gold recovery processing plant. Convey barren rock into truck loading building.
SAG mill (16'x8', 1250hp)	Primary grinding of gold mineralization.
Ball mill (11'x18', 1250hp)	Secondary grinding of gold mineralization.
Gravity gold concentrator	Initial removal of gold from mineralized rock.
Gold Recovery	Shaking tables and doré furnace.
Sulfide flotation cell	Secondary removal of gold from mineralized rock.
Cyclone and screens	Classification of materials by size.
Thickeners	Settling of solids and removal of water.
Filter Presses	Dewatering of concentrate and sand tailings
Paste backfill plant	Dewater fines and combine with cement for backfill in abandoned underground workings
Pumps	Various slurry pumps to transfer material between processes
Compressor	Provides compressed air for process plant
Engineering Fill Operations	
Dozer (CAT D8 or similar)	Move, grade, and compact engineered fill.
Grader (CAT 140H or similar)	
Excavator (CAT 385 or similar)	
Roller compactor	
Haul trucks (20 ton)	Haul and dump engineered fill.
Water truck	Water haul roads and fill areas.
Front-end loader (CAT 980 or similar)	Mix barren rock and sand into engineered fill and load engineered fill into haul trucks for off-site transport.
Mobile auger blending plant	Mobile plant for blending rock and sand.
Mobile tire washing plant	Washing of truck tires leaving non paved sites.
Brunswick Surface Miscellaneous	
Pick-up trucks	Transport materials and people.
Service truck (mechanical)	Service mobile and stationary equipment.
Skid steer/forklift	Move smaller material.
Manlift	Elevate workers.
Grove rough terrain crane	Pick-and-carry operations and off-road and "rough terrain" applications.
Portable generator	Provide mobile electricity for small tools.
Welder	For repairs to machinery.
Fuel, Chemical, and Explosive Storage	
Aboveground diesel fuel storage tank (30,000 gallons – Brunswick Industrial Site and 1,200 gallons – Centennial Industrial Site.)	Storage of fuel for trucks and mobile equipment.
Note: Equipment would be purchased at the time the equipment is needed, and may differ from equipment listed above.	

Fuel and Equipment Maintenance Facilities

Diesel fuel would be stored on-site in aboveground tanks with secondary containment, as required by existing regulations. In addition, a minor amount of petroleum products may be stored on-site

for routine maintenance of the aboveground facilities. An approved spill prevention, control, and countermeasures plan would guide reporting, control, and cleanup activities in the event of a spill.

Water Supply and Other Utilities

The Idaho-Maryland Mine would have a surplus of water from the natural groundwater flow into the underground workings. Once dewatering is completed, approximately 1.9 cubic feet per second, or 850 gallons per minute (approximately 1,224,000 gallons per a day), are estimated to be pumped to the surface and settling pond. Such water would support all project-related water demand (i.e., mining and processing activities). The process plant would run on a closed circuit.

Groundwater consumed during the proposed operations is estimated to be 123,000 gallons per day. Water consumption would include water vapor in ventilation air, cemented paste backfill, concentrates and engineered fill, and dust control and compaction of engineered fill. The following list provides a description of project elements consuming groundwater:

- Underground mining service water: Such uses include water use for dust suppression in rock drills and blasted rock piles, which is piped into the mine workings. Net consumption of water would not result from such activities, because water in underground workings is pumped to the surface for reuse.
- Water Vapor in Ventilation: Ventilation air flow through the mine working would become saturated with water vapor, consuming approximately 40,000 gallons per day of water.
- Cemented Paste Backfill: Water is needed to transport and bind the cemented paste backfill underground. Such water is permanently retained in the backfill or used in the hydration of cement. Backfilling would consume approximately 20,000 gallons of water per day, assuming a 15 percent water content by mass and 500 tons per day of backfill placed.
- Gold Concentrates and Engineered Fill: Concentrates and engineered fill shipped off-site would contain approximately 24,000 gallons of water per day.
- Dust Control and Compaction: Active fill areas and unpaved surfaces require water to control fugitive dust, and engineered fill placed at the Brunswick Industrial Site would need to be compacted to meet design standards. Such activities would consume up to 42,000 gallons per day of water.

An average of approximately 5,700 gallons per day of potable water would be purchased from NID for sinks, toilets, and showers installed in buildings at the Brunswick Industrial Site.

Water needed for compaction and dust suppression during activity at the Centennial Industrial Site would be purchased from NID. Approximately 42,000 gallons of water per day may be required for dust suppression and compaction. Compacting eight hours per day, five days per week, would require water service of up to 125 gallons per minute.

An on-site septic field system would be built at the Brunswick Industrial Site for the permanent toilets, sinks, and shower facilities planned. The proposed project would include portable chemical toilets and hand-washing stations to employees working underground and at the Centennial Industrial Site.

Electricity for the proposed project would be supplied by PG&E. Total connected load is estimated at approximately 10 MW, with a net load of approximately 6 MW. Backup power generation would be provided by four diesel generators with a capacity to provide approximately 6 MW on a continuous basis.

Lighting

The Brunswick Industrial Site would require outdoor and indoor lighting. Indoor lighting will be required for all buildings (see Figure 3-11). As shown in Figure 3-11, the proposed project would include mounted lighting features on the outside of the proposed buildings and in the parking areas. The outside area would have shielded, downward-facing outdoor lighting for safety and security. Work at the Centennial Industrial Site would be done during daylight hours.

Access and Circulation

Access to the Brunswick Industrial Site is currently provided by gated entrances on both East Bennett Road and Brunswick Road. The primary entrance/exit for project employees, vendors, and haul trucks would be from the existing Brunswick Road access. The existing East Bennett Road entrance would be used as an exit for haul trucks and large delivery trucks turning right onto East Bennett Road, for emergency personnel and, as necessary, for equipment movement.

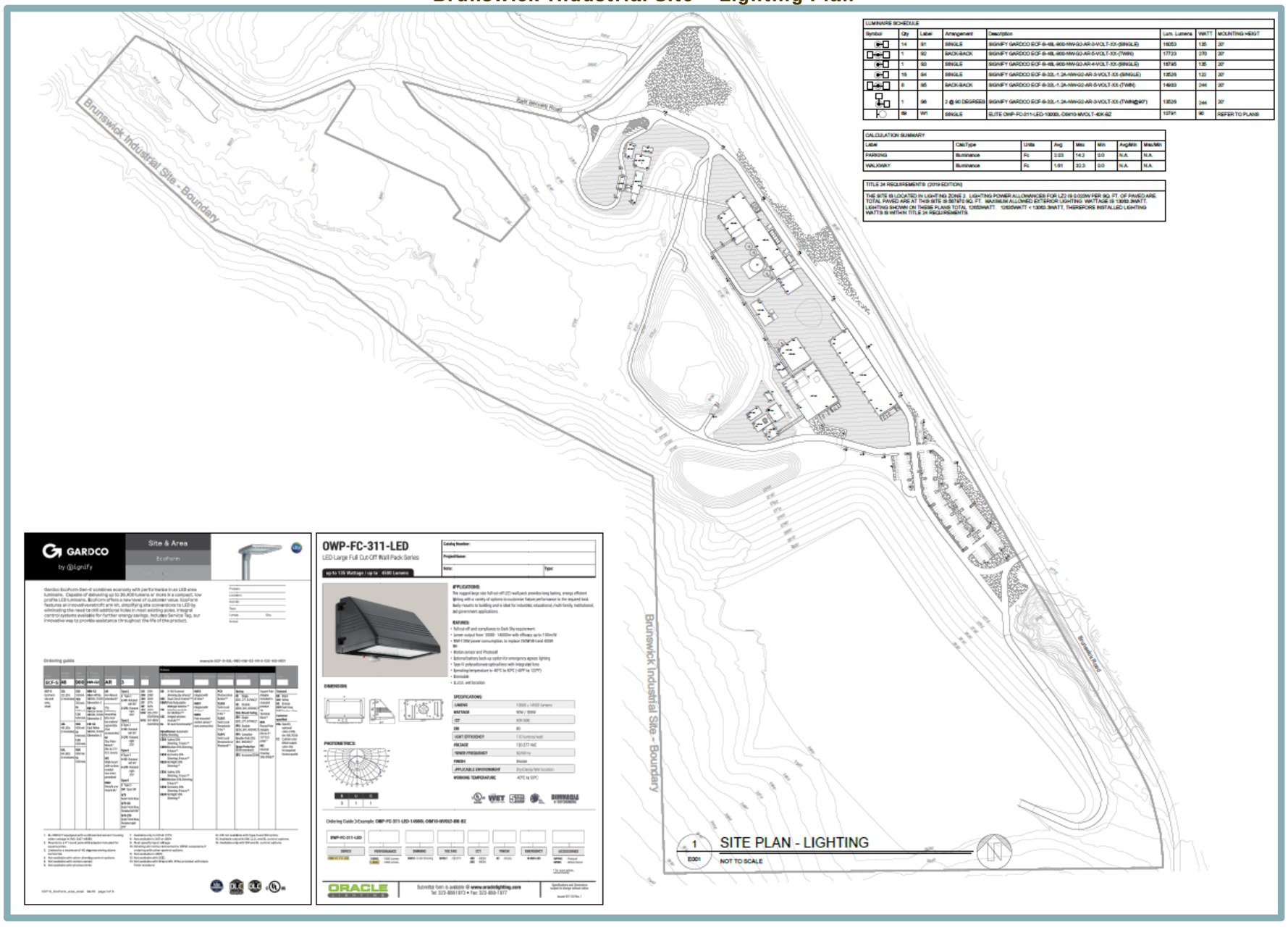
Access to the Centennial Industrial Site is currently located at Whispering Pines Lane. Only employees and haul trucks would use the existing entrance.

Engineered fill from the Brunswick Industrial Site would be hauled to the Centennial Industrial Site by way of Brunswick Road and Whispering Pines Lane. Engineered fill from the Brunswick Industrial Site to other customers would be hauled using Brunswick Road to State Route (SR) 20 or SR 49. Off-site haul of gold concentrate would average one truck trip per a day using Brunswick Road to State Route 20/49. Additional vehicle trip generation information is provided in Chapter 4.11, Transportation, of this EIR.

Site Security and Fencing

All access locations at the project sites are gated and secured. Additional fencing around the aboveground facilities may be installed as part of the proposed project, if deemed necessary for security and safety. Additionally, private security services would be provided if deemed necessary by the project applicant.

Figure 3-11
Brunswick Industrial Site – Lighting Plan



Mine Rescue and Emergency Response

The proposed project would include fully trained and equipped mine-rescue teams. Mine-rescue teams would be trained in accordance with Mine Safety and Health Administration (MSHA) regulations and would be available to respond to underground and surface fires, accidents, or medical emergencies. The project applicant intends to seek cross-training opportunities and mutual-aid agreements with local emergency response organizations and other mining operations. During project operations, skilled tradesmen would be employed on-site, including electricians and mechanics.

Reclamation Plan

Upon completion of underground mining, access to underground workings would be closed consistent with federal and State regulations. Upon completion of aboveground gold processing and off-site sale of engineered fill, the Brunswick Industrial Site would be reclaimed to open space and industrial uses. A majority of the aboveground facilities and structures would remain to support future post-mining industrial uses on the site. Table 3-9 provides a summary of which project components would remain. All paved surfaces, including access roads, parking areas, and driveways, would remain to facilitate access to the site and buildings. The Brunswick and Centennial Industrial Sites fill slopes would be revegetated with an erosion-control seed mix to reduce erosion and maintain fill slope stability. The fill pads would be maintained until they are used or sold for future industrial purposes.

Table 3-9
Reclamation Plan Summary for Operational Components

Site Component	Reclamation Plan
Potable water extension	To remain to service East Bennett residential area.
Brunswick Industrial Site	
Engineered fill	Transported from process plant, Compacted and graded in lifts per geotechnical report recommendations. Side slopes would be vegetated and the pad would be an area for future industrial use.
Covered conveyor from Brunswick headframe to process plant	To be dismantled and removed.
Brunswick and Service shaft headframes and headframe buildings	To be dismantled and removed.
Brunswick shaft	To be closed pursuant to applicable State and federal regulations.
Service shaft	To be closed pursuant to applicable State and federal regulations.
Buildings (Including Mineral processing plant, change room and office, warehouse, hoist rooms, generator, water treatment plant, etc.)	Contents of buildings to be removed; buildings to remain for future industrial use.
Site drainage facilities	To remain on-site for support of future industrial development.
Diesel fuel tank (30,000 gallon)	To be emptied and removed.
Process tanks (clean water, process water, tailing thickener, paste filter feed tank, cement silo, finish water tank)	To remain for future industrial use.
Water treatment pond	To remain on-site for future industrial uses.
South Fork Wolf Creek	Outfall pipeline to be removed after mine dewatering activities are no longer needed.
Paved surfaces, access, and roads	To remain.
Centennial Industrial Site	

Table 3-9 Reclamation Plan Summary for Operational Components	
Site Component	**Reclamation Plan**
Engineered fill	Transported from process plant, compacted and graded in lifts per geotechnical report recommendations. Side slopes would be vegetated and the pad would be reserved for future industrial use.
Site drainage facilities	To remain on-site for support of future industrial development.
Paved surfaces, access, and roads	To remain.

Additional information related to the proposed reclamation activities is provided in the Reclamation Plan for the proposed project, included as an Appendix to this EIR.

3.8 REQUESTED DISCRETIONARY ACTIONS

Implementation of the proposed project would require the following discretionary actions by the County:

- **Rezone application** to rezone the parcels located at the Brunswick Industrial Site from M1-SP to Light Industrial with Mineral Extraction Combining District (M1-ME) to allow for surface mining facilities related to the underground mining operations, pursuant to Nevada County Land Use and Development Code (LUDC), Section L-II 2.7.3;

- **Use Permit** for the following uses and facilities over the 80-year permit life:
  - Operation of pumps and a water treatment facility to dewater the underground mine workings;
  - Construction of a water pipeline to transport treated water to an outfall located in South Fork of Wolf Creek;
  - Construction of the necessary aboveground facilities at the Brunswick Industrial Site (to include but not limited to, headframes and hoists, surface structures, a mineral processing plant) to support underground mining and mineral processing;
  - Underground mining, including drilling, blasting, and gold mineralization removal;
  - Gold mineralization and rock processing at the Brunswick Industrial Site off-site transport of gold concentrate;
  - Transport of engineered fill from the Brunswick Industrial Site and placement at the Centennial Industrial Site;
  - Transport of engineered fill from the Brunswick Industrial Site to off-site construction project;
  - Placement of engineered fill at the Brunswick Industrial Site; and
  - Construction of a potable water pipeline to supply residences along a portion of East Bennet Road.

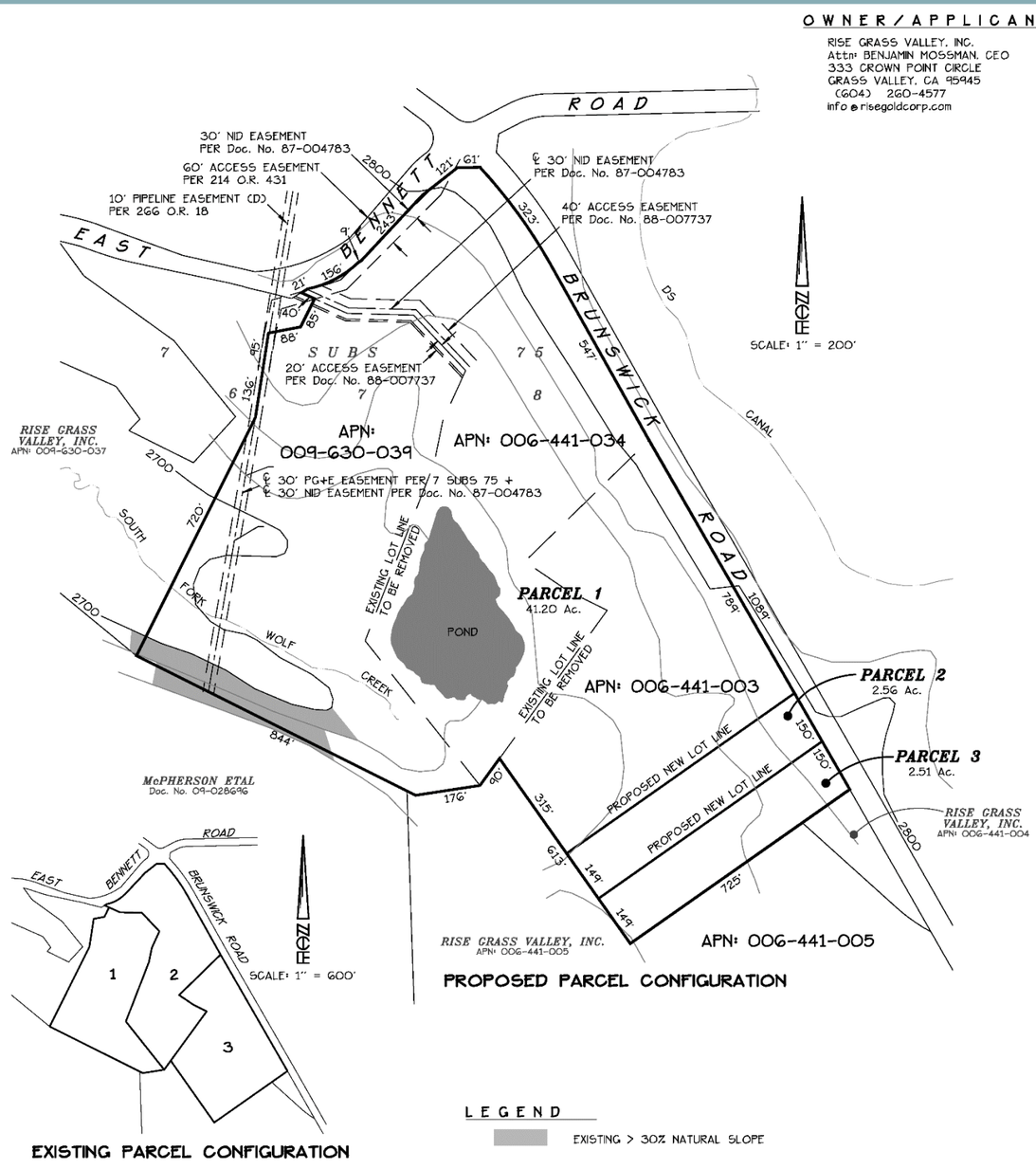
- **Reclamation Plan and Financial Assurance Cost Estimate** to reclaim project related surface disturbance to a condition suitable for industrial uses as allowed by Nevada County Land Use and Development Code (LUDC), Section L-II 2.5 – Industrial Uses and Table L-II 2.5 D – Light Industrial;

- **Variance to the Building Height Limits** to allow for the construction of several structures up to a height of 165 feet, where 45 feet is required, pursuant to the Light Industrial Zoning District (LUDC, Section, Table L-II 2.5.E);

- **Management Plan** component in order to accomplish the following:
    - Allow for development within the required 100-foot setback from the Riparian Area of Perennial Watercourse, pursuant to LUDC, Section L-II 4.3.17 at the Brunswick and Centennial Industrial Sites;
    - Minimize the direct impact to special-status plant species, pursuant to LUDC, Section L-II 4.3.12 at the Centennial Industrial Site;
    - Allow development within locations of areas of steep slopes that are in excess of 30 percent at both the Brunswick and Centennial Industrial Sites, pursuant to LUDC, Section L-II 4.3.13; and
    - Allow for development within a building setback fault zone at the Brunswick Industrial Site, pursuant to LUDC, Section L-II 4.3.8.

- **Boundary Line Adjustment** to transfer approximately 46.27 acres for three separate parcels (APN: 009-630-039, 006-441-034, 006-441-003) to reconfigure the property lines to resolve an issue of the proposed buildings crossing property lines at the Brunswick Industrial Site.

Figure 3-12
Proposed Boundary Line Adjustment



OWNER/APPLICANT:

RISE GRASS VALLEY, INC.
Attn: BENJAMIN MOSSMAN, CEO
333 CROWN POINT CIRCLE
GRASS VALLEY, CA 95945
(604) 260-4577
info @ risegoldcorp.com

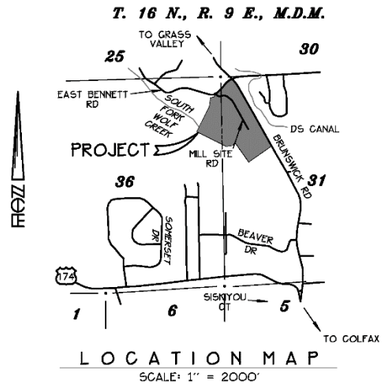
PREPARED BY:

ANDREW R. CASSANO, L.S. 4370
NEVADA CITY ENGINEERING, INC.
505 COYOTE STREET - SUITE "B"
NEVADA CITY, CA 95959
(530) 265-6911

LICENSED LAND SURVEYOR ANDREW R. CASSANO L.S. #4370 STATE OF CALIFORNIA

2/27/20

THIS IS A PLANNING EXHIBIT AND DOES NOT REPRESENT A FORMAL BOUNDARY OR FEATURE SURVEY



LOCATION MAP
SCALE: 1" = 2000'

NOTES:

1. PROPERTY PROFILE EXISTING

EXISTING PARCEL #	A.P.N.	ZONING	EXISTING AREA	LOT POTENTIAL
1	009-630-039	AG-5	15.07 Ac.	1
2	006-441-034	AG-5	16.01 Ac.	1
3	006-441-003	AG-5	15.19 Ac.	1
TOTALS:	--	--	46.27 Ac.	3

2. PROPERTY PROFILE PROPOSED

PROPOSED PARCEL #	A.P.N.	PROPOSED AREA	LOT POTENTIAL
1	009-630-039, 006-441-034 + PTN. 006-441-003	41.20 Ac.	1
2	PTN. 006-441-003	2.56 Ac.	1
3	PTN. 006-441-003	2.51 Ac.	1
TOTALS:	--	46.27 Ac.	3

3. PROPERTY PROFILE:
   - A.P.N.'S: 009-630-039, 006-441-003 + 034
   - AREA: 46.27 Ac.
   - ZONING: MI-SP

4. COMMUNITY SERVICE INFORMATION:
   - SCHOOL DISTRICTS: NEVADA JOINT UNION HIGH SCHOOL DISTRICT; UNION HILL ELEMENTARY SCHOOL DISTRICT
   - FIRE PROTECTION: OPHIR HILL FIRE PROTECTION DISTRICT
   - TELEPHONE: AT+T
   - POWER: PACIFIC GAS AND ELECTRIC
   - SEWAGE DISPOSAL: INDIVIDUAL SEPTIC SYSTEMS
   - WATER: NEVADA IRRIGATION DISTRICT

5. CONTOURS SHOWN HEREON WERE EXTRAPOLATED FROM THE "GRASS VALLEY" U.S.G.S. 7.5 MINUTE QUADRANGLE. THE CONTOUR INTERVAL IS 20 FEET.

PROPOSED LOT LINE ADJUSTMENT
FOR
RISE GRASS VALLEY, INC.
BEING ALL OF
LOT 7 + PTN. LOT 8 BOOK 7 SUBS PAGE 75
+ PTN. OF NW 1/4 SEC. 31, T. 16 N., R. 9 E., M.D.M.
WITHIN THE UNINCORPORATED TERRITORY OF
NEVADA COUNTY . CALIFORNIA
SCALE: AS SHOWN FEBRUARY, 2020
NEVADA CITY ENGINEERING, INC.
505 COYOTE STREET * P.O. BOX 1437 * NEVADA CITY * CALIFORNIA