

Brunswick Industrial Site and East Bennett Road Right of Way (ROW)

Watercourse / Wetlands / Riparian Areas Management Plan

Prepared for:
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1 REPORT COVER

Report Date: January 2021

Report Preparer: Mr. Greg Matuzak
Greg Matuzak Environmental Consulting LLC

Project Site: Brunswick Industrial Site
East Bennett Road ROW

Project Site Location: SECTION 36, T.16N, R.8E & SECTION 31, T.16N, R.9E
SECTION 25, T.16N, R.8E

BRUNSWICK INDUSTRIAL SITE		
Assessor Parcel Number	Site Address	Lot Size (Acres)
009-630-037	12603 East Bennett Road	21.8 AC
009-630-039	12301 Millsite Road	15.07 AC
006-441-003	12503 Brunswick Road	15.19 AC
006-441-004	12625 Brunswick Road	0.85 AC
006-441-005	12791 Brunswick Road	50.01 AC
006-441-034	12381 Brunswick Road	16.01 AC
Brunswick Industrial Site - Land Total:		118.93 AC
East Bennett Road ROW:		10.3 AC
Brunswick Area - Land Total:		129.23 AC

Property Owner /
Applicant: Rise Grass Valley, Inc.
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2 INTRODUCTION

2.1 Introduction

At the request of Rise Grass Valley Inc. (“Rise Grass Valley” or “Rise”), Mr. Greg Matuzak was retained to prepare a Watercourse / Wetlands / Riparian Areas Management Plan (“Management Plan” or “Aquatic Resources Management Plan”) for the Brunswick Industrial Site and East Bennett Road Right of Way (“Brunswick Area”) located in Nevada County, California (see Project Overview Figures in Appendix A). The East Bennett Road Right of Way (“East Bennett Road ROW”) is an approximate 1.25-mile public right of way that connects the Brunswick Industrial Site with Rise’s Centennial Industrial Site. This Management Plan references and incorporates the findings of two stand-alone reports completed for the Brunswick Area:

- Brunswick Industrial Site and East Bennett Road Right of Way (ROW) Aquatic Resources Delineation of Waters of the United States and State of California (Greg Matuzak Environmental Consulting LLC, 2020a).
- Brunswick Industrial Site and East Bennett Road Right of Way (ROW) Biological Resources Assessment (Greg Matuzak Environmental Consulting LLC, 2021).

2.2 Nevada County Land Use and Development Code

Per the Nevada County Land Use and Development Code, Chapter II; Zoning Regulations, Section L-II 4.3.17 (Ordinance Number 2033) requires a Watercourses, Wetlands, and Riparian Areas Management Plan be prepared for projects in non-disturbance buffers, including areas that are within 100 feet of the high water mark of perennial streams, watercourses, and wetlands, 50 feet from the high water mark of intermittent watercourses, and 100 feet upslope or 20 feet downslope from an NID canal (Nevada County Code, 2000). Therefore, this Aquatic Resources Management Plan was developed due to the proposed future impacts to protected aquatic resources and their non-disturbance buffers within the Brunswick Area. The development of this Management Plan meets the requirements of the Nevada County Land Use and Development Code for the proposed development within aquatic features mapped within the Brunswick Area, as well as potential disturbance within their non-disturbance buffers.

2.3 Project Statement

This Management Plan was developed pursuant to Sec. L-II 4.3.17.C of Nevada County Zoning Regulations, required for development projects that will result in disturbance of sensitive aquatic resources. Table 1.0 below outlines the proposed disturbance impacts to aquatic resources subject to Nevada County regulations within the Brunswick Area.

The proposed disturbance within the Brunswick Area includes ~0.57 acres of permanent impacts to wetlands subject to a 100-foot non-disturbance buffer, ~0.01 acres of permanent impacts to the perennial South Fork Wolf Creek subject to a 100-foot non-disturbance buffer, and ~0.052 acres of permanent impacts to intermittent and ephemeral streams (I-5 and E-2) subject to 50-foot non-disturbance buffer. Additionally, temporary disturbances are estimated to include ~0.04 acres to the perennial South Fork Wolf Creek subject to a 100-foot non-disturbance buffer and ~0.001 acres to ephemeral stream E-1 subject to a 50-foot non-disturbance buffer as detailed in Table 1.0. The disturbance impacts are based on the Project Description outlined in Section 5 of this Management Plan and the Site Plan Figure 1 and Figure 2.

The proposed disturbance or encroachment into the 100-foot non-disturbance buffer areas to wetlands and perennial streams and 50-foot non-disturbance buffer areas to intermittent aquatic resources is the focus of this Management Plan.

TABLE 1.0 DISTURBANCE IMPACTS TO AQUATIC RESOURCES

Direct & Permanent Disturbance Impacts			
Size	Impact Type	Mapped Feature ID	Non-Disturbance Buffer
0.57 acres	Permanent fill impacts to wetlands	WM-1, WM-2, WM-3, MA-1, MA-2, MA-3, MA-4, MA-5, MA-6, RI-1	100 ft
15 linear feet (x 30ft) (~0.01 acres)	Permanent fill impact to perennial stream	South Fork Wolf Creek	100 ft
33.5 linear feet (~0.002 acres)	Permanent fill impact to intermittent stream	I-5	50 ft
188 linear feet (~0.05 acres)	Permanent fill impact to ephemeral stream	E-2	50 ft
Temporary Disturbance Impacts			
Size	Impact Type	Mapped Feature ID	Non-Disturbance Buffer
40 linear feet (~0.04 acres)	Temporary disturbance to perennial stream	South Fork Wolf Creek	100 ft
16 linear feet (~0.001 acres)	Temporary disturbance to ephemeral stream	E-1	50 ft

3 SUMMARY OF MANAGEMENT PLAN CONCLUSIONS AND RECOMMENDATIONS

Permanent and temporary impacts to stream and wetland resources mapped within the Brunswick Area will be included in regulatory agency permits. The regulatory agency permits as outlined in Section 7.1 of this Management Plan will include required measures to minimize and mitigate for impacts to such resources.

Additionally, Section 7 of this Management Plan includes mitigation measures to ensure that potential impacts to stream and wetland resources, as well as their non-disturbance buffer areas, are minimized. The recommended measures of mitigation include the following:

- Limit construction to periods of extended dry weather and the dry summer season, if feasible;
- Establishing the areas around active stream channels and wetlands as Environmentally Sensitive Area (ESA) where those areas will not be impacted by construction or thereafter;
- No fill or dredge material will enter or be removed from any wetlands or streams except for those identified in Table 4.0 and Table 5.0 in this Management Plan during construction and thereafter;
- Use appropriate machinery and equipment to limit disturbance within and directly adjacent to these areas;
- Placement of soil erosion control devices (such as wattles, hay bales, etc.) between the protected aquatic resources (wetlands and streams) and the areas to be graded and disturbed to limit potential runoff and sedimentation into such protected resources;
- Dewatering of any streams that will be required to occur as part of the proposed disturbance within the Brunswick Area must include a Water Diversion Plan and be approved by CDFW prior to the implementation of such dewatering activities; and
- Implement Best Management Practices during and following construction.

Additional mitigation measures are incorporated by reference from the Biological Resources Assessment developed for the Brunswick Area specifically for special-status wildlife and plant species that have the potential to occur within the proposed disturbance areas within the Brunswick Area.

4 PROPERTY DESCRIPTION

4.1 Project Setting

The Management Plan encompasses complete coverage of the 118.93-acre Brunswick Industrial Site and the 10.3-acre East Bennett Road ROW for a total Brunswick Area of 129.23 acres; see Appendix A for Brunswick Area Overview Figures. The recorded owner of the surface land which comprises the Brunswick Industrial Site is Rise Grass Valley while the East Bennett Road ROW is a public right of way.

The Brunswick Industrial Site is bordered by Brunswick Road along the eastern boundary and East Bennett Road along the northern boundary. The Brunswick Industrial Site is surrounded by private developed and undeveloped residential and industrial districts zoning and land uses. The East Bennett Road ROW study area is surrounded by private residential and industrial districts zoning and land uses. The East Bennett Road ROW study area includes an easement area from East Bennett Road to the Centennial Industrial Site. The easement area crosses private industrial property that is heavily disturbed by industrial operations.

4.2 Brunswick Area Characterization

The Brunswick Industrial Site has been disturbed by historic mining and lumber mill practices, public access, and ongoing management for many years which is now considered baseline condition for the Brunswick Industrial Site. Within the Brunswick Industrial Site, the dumping of soils, landscape materials, and other miscellaneous items has also occurred for many years and the current circumstances are now considered baseline conditions. A large section of the Brunswick Industrial Site located in the eastern areas along Brunswick Road are characterized as disturbed and/or developed given the amount of pavement and impervious surfaces in those areas as well as the remaining infrastructure related to historic mining and mill operations. Areas not subject to this regular type of previous disturbance are dominated by native habitat and, therefore, are also the baseline condition within the Brunswick Industrial Site.

The portion of the Brunswick Area that includes the East Bennett Road ROW contains a developed and paved public road and ROW that has been used for decades. In addition, the shoulders of East Bennett Road that are included as part of the East Bennett Road ROW are also developed given the grading and fill material associated with the development of the road within the Brunswick Area. A Photo Log for the Brunswick Area is included in Appendix E.

The Brunswick Area includes a single perennial stream, South Fork Wolf Creek.

A 48" culvert runs ~1600 ft underneath the Brunswick Industrial Site from the western side of Brunswick Road to the western side of the Brunswick Industrial Site. This culvert collects runoff from Brunswick Road as well as from a portion of the watershed to the east and south of the Brunswick Industrial Site.

South Fork Wolf Creek originates from the outlet of this 48" diameter culvert on the western side of the Brunswick Industrial Site and flows in a north westerly direction approximately 2.7 miles. Within the City of Grass Valley, the creek enters into an underground culvert and concrete channel system which conveys the waters of the South Fork to the main stem of Wolf Creek.

4.3 Brunswick Area Resources

The Aquatic Resources Delineation Report for the Brunswick Area (Matuzak, 2020a) evaluated and mapped the location and extent of "waters of the United States", including wetlands and "waters of the State of California". A summary of the aquatic resource delineation results for the Brunswick Area are presented in Table 2.0 (see Figure 3 for an overview of the Aquatic Resources mapped within the Brunswick Area).

TABLE 2.0 SUMMARY OF AQUATIC RESOURCES DELINEATION RESULTS

Wetland/Stream Type	No. of Features	Size (Acres)	Length (Linear Feet)
Wetlands			
Meadow Wetland	4	6.97	
Freshwater Emergent Marsh Wetland	6	0.50	
Riparian Wetland	3	1.16	
Roadside Wetland	1	0.09	
Total	14	8.72	
"Other Waters of the U.S"			
Perennial Stream	2	0.75	3,264
Intermittent Stream	5	0.07	745
Ephemeral Stream	2	0.06	383
Total	8	0.88	4,392

The key findings of the Aquatic Resources Delineation (Matuzak, 2020a) included the following:

- A total of 9.60 acres of "waters of the U.S.", including wetlands, and "waters of the State of California", were identified and mapped within the Brunswick Industrial Site and along the East Bennett Road Right of Way. The 9.60 acres of wetland-waters include 8.72 acres of mapped wetlands and 0.88 acres of mapped "other waters of the U.S.," including a perennial drainage along the western edge of Brunswick Road, South Fork Wolf Creek, as well as several intermittent and

ephemeral streams. The mapped wetlands and “other waters of the U.S.” require verification by the U.S. Army Corps of Engineers (Corps) and the Central Valley Regional Water Quality Control Board (RWQCB).

The key findings of the Biological Resources Assessment (Matuzak, 2021) included the following:

- Perennial marsh wetlands, a large manmade pond, and South Fork of Wolf Creek within the Brunswick Industrial Site contains suitable habitat for several special-status aquatic wildlife species, including the foothill yellow-legged frog (*Rana boylei*), listed as Endangered under the California State ESA (CESA), California black rail (*Laterallus jamaicensis coturiculus*) listed as Threatened under CESA, the California red-legged frog (*Rana aurora draytonii*) listed as Threatened under the federal ESA, and the Western pond turtle (*Emys marmorata*), a California State Species of Concern. None of these species were observed within the Brunswick Industrial Site during any of the special-status species surveys within the Brunswick Area; however, the mapped aquatic habitat within the Brunswick Area contains suitable habitat for these species.
- The Brunswick Area contains suitable habitat for several CNPS ranked plants and special-status plant species. A single California Native Plant Society (CNPS) List 4 Species, the Humboldt lily (*Lilium humboldtii ssp. humboldtii*) was documented and mapped within the Brunswick Area during special-status plant surveys. A single occurrence of the Humboldt lily consisting of a few individuals was mapped within the East Bennett Road ROW and a single occurrence of the Humboldt lily consisting of 10 individuals was mapped within the Brunswick Industrial Site during 2019 field surveys. These CNPS List 4 species are not threatened or endangered and do not have protected status under CEQA.
- Woodland and grassland habitats within the Brunswick Industrial Site and along the East Bennett Road Right of Way contains suitable nesting habitat for protected raptors and birds. Suitable habitat for these species includes the edges of the South Fork Wolf Creek and other riparian wetlands mapped within the Brunswick Industrial Site. None of these species were observed within the Brunswick Industrial Site or along the East Bennett Road Right of Way during any of the special-status species surveys within the Brunswick Area.
- The disturbed and developed areas within the Brunswick Industrial Site contain suitable habitat for the coast horned lizard (*Phrynosoma blainvillii*), a California Species of Concern, and the historic cement silos within the Brunswick Industrial Site contains roosting habitat for bats, including the Townsend's big-eared bat (*Corynorhinus townsendii*), a California Species of Concern. Additionally, the forested areas within the Brunswick Area contain suitable habitat for other bat species. None of these species was observed within the Brunswick Area during any

of the special-status species surveys within the Brunswick Area and both species have a low likelihood to occur within the Brunswick Area.

Descriptions of biological resources, as excerpted from the Biological Resources Assessment (Matuzak, 2021), are included as reference material in the following Appendices:

Appendix B – USDA Soils Maps and Descriptions

Appendix C – Vegetation Community Map and Descriptions

Appendix D – Plant Species Observed During Site Surveys

Appendix F – CNPS Ranked Plants and Special-Status Plants and
Wildlife Species Descriptions

5 PROJECT DESCRIPTION

5.1 Project Description

Rise Grass Valley proposes to reinitiate underground mining and ore processing of the Idaho-Maryland Mine in Nevada County, CA. The proposed facilities and operations to support underground mining will be located on the Brunswick Industrial Site consisting of six contiguous parcels zoned Light Industrial ("M-1"). The project comprises four primary elements: (1) dewatering of the existing underground mine workings, (2) mining existing and new underground mine workings, (3) processing ore and rock, and (4) placing engineered fill at the Centennial and Brunswick Industrial Sites.

The Brunswick Industrial Site is approximately 2 miles from the center of the City of Grass Valley and State Route 49. Several shaft entrances are located on the Brunswick Industrial Site from historic mine operations, including the Brunswick and Union Hill shafts. Other portions of the site include graveled or paved areas from previous land uses.

The project site plan for the Brunswick Industrial Site comprises five areas: aboveground site facilities, underground mining, treated and potable water pipelines, the Brunswick engineered fill area, and outfall for the treated water to South Fork Wolf Creek. See Figure 1 and Figure 2 for the proposed project site plan.

In total, approximately 60 acres of the 118.93-acre site will be subject to surface use and/or development for the aboveground facilities and fill placement to support dewatering, mining, and processing. The remaining ~59 acres will be undisturbed from the proposed project. An ~8-acre area of meadow wetlands and riparian wetlands located north and adjacent to South Fork Wolf Creek will remain undisturbed due to development on the Brunswick Industrial Site.

5.2 Project Components and Associated Impacts

Project Components that may cause potential impacts to aquatic resources and associated non-disturbance buffer zones in the Brunswick Area, include the following:

- The groundwater from the mine will be pumped via a pipeline to an existing clay-lined settling pond for water treatment. An aboveground pipe will convey treated water from the water treatment facility at the Brunswick Industrial Site along an existing access road on the property to an outfall located at South Fork Wolf Creek. The pipe and discharge point are located entirely within the property boundaries. Initial dewatering of the underground workings and subsequent operational dewatering of the mine are estimated to have a maximum discharge rate of 5.6 cubic feet per second (cfs).

IMPACT 1: Construction of treated mine water outfall to South Fork Wolf Creek.

IMPACT 2: Treated water pipe placement will cross an ephemeral stream.

- The existing culvert that daylight on the Brunswick Industrial Site, creating the South Fork Wolf Creek, will be replaced and upgraded with a new culvert to replace the existing culvert.

IMPACT 3: Replacement of deteriorated culvert at South Fork Work Creek.

- A buried potable water pipeline will be installed to provide water to residences along the portion of the Brunswick Area containing the East Bennett Road ROW. The existing Nevada Irrigation District (NID) potable water pipeline will be extended within the East Bennet Road ROW to provide potable water service to residences currently on wells that may be affected by the project.

NO IMPACTS.

- To support dewatering and underground mining, aboveground structures and processing facilities will be constructed and installed. Engineered fill, a by-product of the underground mining process composed of barren rock and sand, will be placed, graded, and compacted in a series of lifts across the southwest portion of the Brunswick Industrial Site.

IMPACT 4: Permanent fill to small wetlands from construction and grading.

IMPACT 5: Site grading will include permanent fill of a section of an intermittent stream.

IMPACT 6: Engineered fill industrial pad will include permanent fill a section of an ephemeral stream.

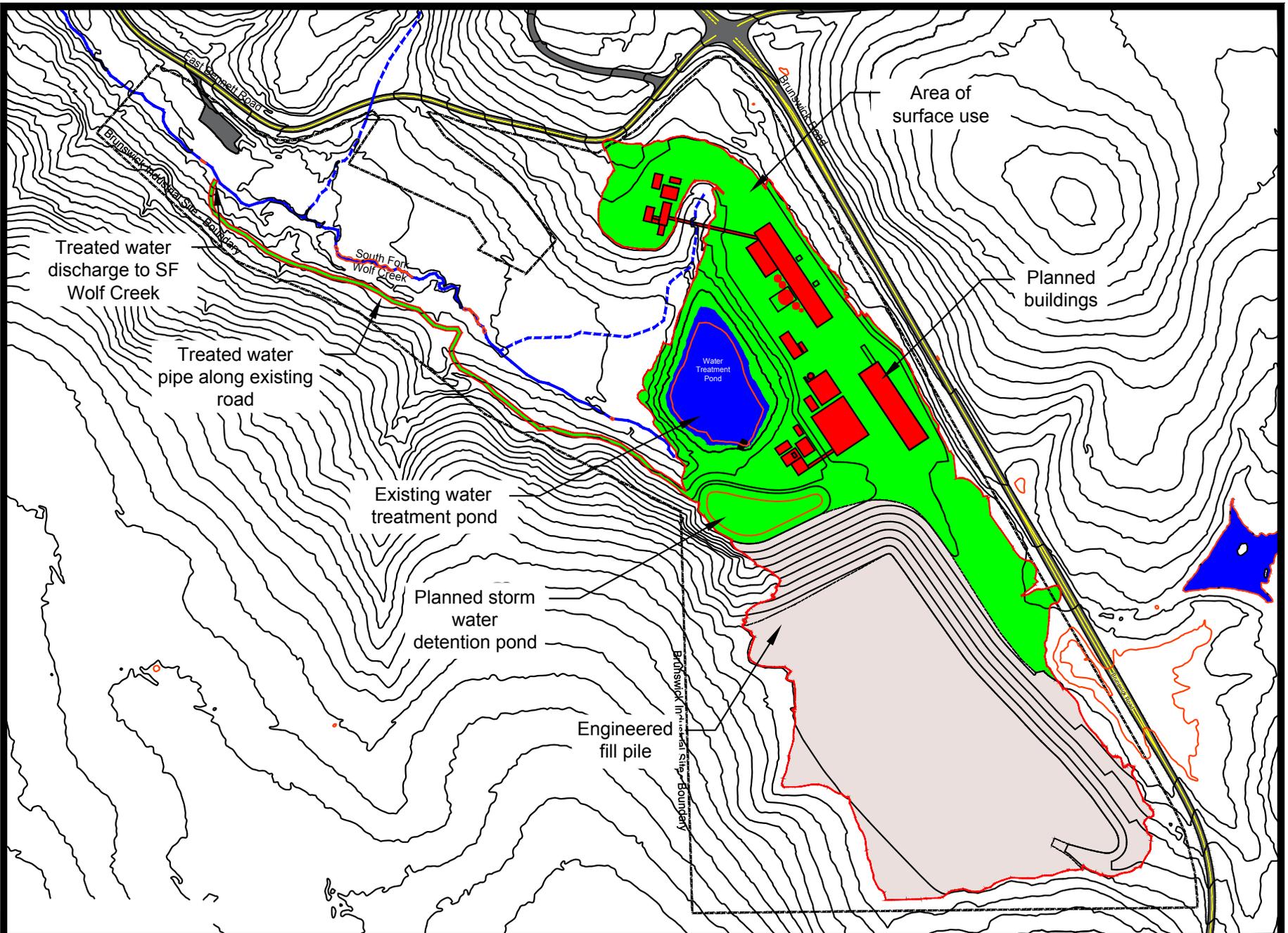
- The existing clay lined pond will be used for water treatment and surface storage capacity to support initial and operational mine dewatering activities.

IMPACT 7: Repair to the existing manmade pond will require work in the 100-foot non-disturbance buffer of South Fork Wolf Creek.

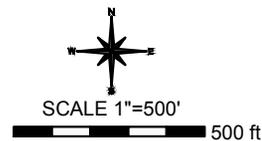
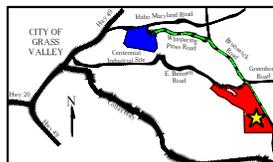
Project development will permanently impact approximately 7% of the Brunswick Area wetlands: ~0.57 acres wetlands impacted of the total 8.72 acres mapped wetlands.

Project development will permanently impact approximately 6% of the Brunswick Area "waters of the U.S.": ~237 linear feet of streams impacted of the total 3,691 linear feet of mapped streams.

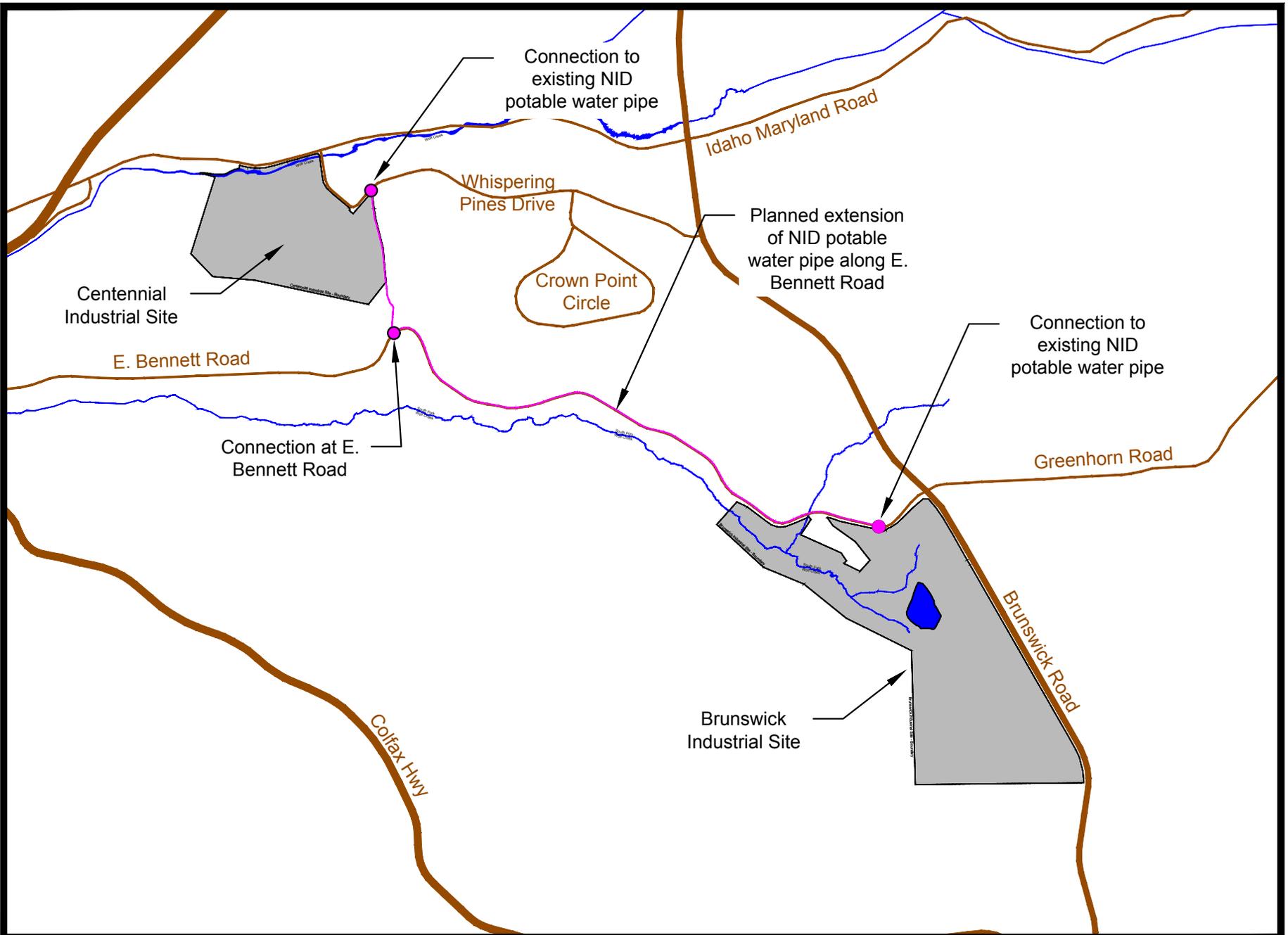
Project development will temporarily cause disturbance impact to approximately 2% of the Brunswick Area "waters of the U.S.": ~56 linear feet of streams impacted of the total 3,691 linear feet of mapped streams.



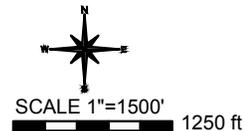
Idaho-Maryland Gold Project
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Brunswick Industrial Site
Site Plan
 Showing final topography
 Elevation contours at 10 ft intervals



Idaho-Maryland Gold Project
 Rise Grass Valley Inc.
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NID potable water pipe extension
 Showing route of new pipe along E. Bennett Road

6 ANALYSIS OF POTENTIAL IMPACTS

Background biological resources surveys and technical reporting developed for the Brunswick Area that form the basis for this Management Plan include the following:

- Brunswick Industrial Site and East Bennett Road ROW Aquatic Resources Delineation of Waters of the United States and State of California (Greg Matuzak Environmental Consulting LLC, 2020a).
- Brunswick Industrial Site and East Bennett Road ROW Biological Resources Assessment (Greg Matuzak Environmental Consulting LLC, 2021).
- Brunswick Site Special Status Plant Survey Report (Wendy Boes Botanical Consultant, August 2020).

6.1 Reconnaissance-level Biological Resources Field Surveys

Reconnaissance-level biological resources field surveys as well as the delineation of “waters of the U.S.,” including wetlands, were conducted on foot for the entirety of the Brunswick Area (129.23 acres) by Greg Matuzak, Principal Biologist and owner of Greg Matuzak Environmental Consulting LLC, and Wendy Boes, a local Nevada County botanist, on December 9th through 12th, 17th, and 18th, 2018. Follow up reconnaissance-level biological resources, including finalizing the initial delineation of aquatic resources field surveys within the Brunswick Area were conducted by Greg Matuzak on December 30th, 2018 and by Wendy Boes for the CNPS ranked plant and special-status plant species habitat on January 3rd, 2019. The purpose of the surveys completed in December 2018 and January 2019 was to identify habitat and vegetation types and to determine the potential for any special- status plant and wildlife species identified in the desktop analysis and background research to occur within the Brunswick Area as well as identify and map each of the “waters of the U.S.,” including wetlands, covered within this Management Plan.

Further evaluation of the Brunswick Area was conducted on July 1st and 14th, and August 16th, 2019 by Ms. Boes who implemented botanical surveys within the entirety of the Brunswick Area during the time of year when the target CNPS ranked plants and special-status plant species with potential to occur within the Brunswick Area are known to be in bloom and identification of each is most likely. Mr. Matuzak conducted a follow up delineation of “waters of the U.S.,” including wetlands, within the Brunswick Industrial Site and a habitat assessment and VES method survey for the foothill yellow-legged frog in South Fork Wolf Creek within the Brunswick Industrial Site on August 29th, 2019.

The presence of streams and wetlands within the Brunswick Area that could be regulated by state and/or federal agencies were identified and mapped, see the stand-alone

Aquatic Resources Delineation reporting for the Brunswick Area (Matuzak, 2020a). The entirety of the Brunswick Area was surveyed on foot and a list of plant and wildlife species observed during the field surveys was compiled (see Appendix D for species lists). A Photo Log is included in Appendix E, which documents the Brunswick Area during the field surveys.

6.2 Environmental Setting

Vegetation communities within the Brunswick Area are typical of the lower Sierra Nevada foothills. However, the terrain within the Brunswick Area is not typical of the lower Sierra Nevada foothills that normally vary between flat ridges and valleys to gently and moderately sloping hillsides given the high level of development and disturbance within the Brunswick Area. The Brunswick Industrial Site elevation ranges from approximately 2,675 to 2,950 feet above mean sea level (MSL) and the East Bennett Road ROW elevation ranges from approximately 2,650 to 2,850 to feet above MSL.

The Brunswick Area is located in an area containing South Fork Wolf Creek, a perennial stream. Several intermittent and ephemeral streams connect directly to South Fork Wolf Creek within the Brunswick Industrial Site. South Fork Wolf Creek is located to the south of the East Bennett Road ROW within the Brunswick Area. South Fork Wolf Creek contains associated riparian woodland and scrub and large tracks of wet meadow wetlands dominant in the northwestern section of the Brunswick Industrial Site.

South Fork Wolf Creek surfaces within the Brunswick Industrial Site south of a large man-made clay lined pond and flows northwest across the Brunswick Area. South Fork Wolf Creek daylights from an existing 48" diameter culvert which is approximately 1,600 feet long (Regional Water Quality Control Board Order No. 88-185, December 18th, 1990). The 48" culvert appears to be fed by surface drainage on the east side of Brunswick Road, which crosses Brunswick Road through a culvert. Additionally, perennial surface drainage from the west side of Brunswick Road drains north to the 48" culvert inlet. The 48" culvert was flowing water in December 2018 as well as during the July and August 2019 site surveys conducted as part of the development of this Management Plan (see Photo Log in Appendix E).

6.3 Brunswick Area Soil Types

The soil types mapped within the Brunswick Area are included in Appendix B with a description of each.

6.4 Brunswick Area Vegetation Communities

The vegetation communities identified within the Brunswick Area and their associated acreages mapped are presented in Table 3.0. Appendix C includes a map and descriptions of the vegetation communities.

TABLE 3.0 VEGETATION COMMUNITIES AND ACREAGES

Vegetation Community	Acres within Brunswick Area
Montane Hardwood-Conifer	15.63
Montane Hardwood	1.65
Ponderosa Pine	4.85
Sierran Mixed Conifer	35.98
Annual Grassland	8.15
Manmade Pond	7.28
Wet Meadow	9.36
Developed	29.49
Disturbed	16.84
Total	129.23

6.5 Special-Status Species

Appendix F includes an evaluation of the CNPS ranked plants and special-status plant and wildlife species with potential to occur within the Brunswick Area and those species are represented within Table 6.0 below.

6.6 Brunswick Area Disturbance Impacts to Sensitive Biological Resources

In total, approximately 60 acres of the 118.93-acre site will be subject to surface use and/or development for the aboveground facilities and fill placement to support dewatering, mining, and processing. The proposed disturbance or encroachment into the 100-foot non-disturbance buffer areas to wetlands and perennial streams and 50-foot non-disturbance buffer areas to intermittent aquatic resources is the focus of this Management Plan. An evaluation of impacts to the aquatic resources and their subsequent non-disturbance buffer zone covered under this Management Plan are provided below.

6.6.1 Project Impact Tables

Based on the Project Description of the proposed Idaho-Maryland Mine, Table 4.0 and Table 5.0 below include the estimated disturbance within the Brunswick Area to mapped wetlands and streams per the Aquatic Resources Delineation of Waters of the United States and State of California (Matuzak, 2020a). The Aquatic Resources Delineation is presented in Figure 3 below.

TABLE 4.0 AREA OF DISTURBANCE TO MAPPED WETLANDS WITHIN THE BRUNSWICK AREA

No.	Wetland Type	Wetland ID Number	Size (Acres)	Area of Disturbance (Acres)
1	Meadow wetland	WM-1	0.02	0.02
2	Meadow wetland	WM-2	0.01	0.01
3	Meadow wetland	WM-3	0.01	0.01
4	Meadow wetland	WM-4	6.93	-----
5	Marsh	MA-1	0.1	0.1
6	Marsh	MA-2	0.3	0.3
7	Marsh	MA-3	0.02	0.02
8	Marsh	MA-4	0.007	0.007
9	Marsh	MA-5	0.05	0.05
10	Marsh	MA-6	0.02	0.02
11	Riparian	RI-1	0.03	0.03
12	Riparian	RI-2	0.76	-----
13	Riparian	RI-3	0.37	-----
14	Roadside Wetland	RW-1	0.09	-----
14	-----	TOTAL	8.72	0.57 acres

TABLE 5.0 AREA OF DISTURBANCE TO MAPPED STREAMS WITHIN THE BRUNSWICK AREA

No.	Stream Type	Stream ID Number	Size (Acres)	Estimated Disturbance (acres and linear feet)
1	Perennial Stream	South Fork Wolf Creek – 1	0.59	15 lf. (0.01 acres) * 40 lf. (0.04 acres) *
2	Perennial Drainage	P – 1	0.16	-----
3	Intermittent Stream	I – 1	0.05	-----
4	Intermittent Stream	I – 2	0.002	-----
5	Intermittent Stream	I – 3	0.006	-----
6	Intermittent Stream	I – 4	0.003	-----
7	Intermittent Stream	I – 5	0.004	33.5 lf. (0.002 acres)
8	Ephemeral Stream	E – 1	0.01	16 lf. (0.001 acres)
9	Ephemeral Stream	E – 2	0.05	188 lf. (0.05 acres)
9	-----	TOTAL	0.88	293 lf. (0.103 acres) **

* impacts estimated at 0.01 acres (permanent) and 0.04 acres (temporary)

** impacts estimated at 0.062 acres (permanent) and 0.041 acres (temporary)

Special-status species associated with the vegetation communities mapped within the Brunswick Area are included in Table 6.0 below. Each of the vegetation communities in Table 6.0 contain the wetlands and streams and/or their non- disturbance buffers that are covered under this Management Plan.

TABLE 6.0 SPECIAL-STATUS SPECIES ASSOCIATED WITH VEGETATION COMMUNITIES

Vegetation Community	Associated Special-Status Species
Montane Hardwood-Conifer	Sierra arching sedge (Rank 1B.2), Sierra blue grass (Rank 1B.3), Cantelow's lewisia (Rank 1B.2) Cooper's hawk and other nesting raptors and migratory birds (CDFW)
Montane Hardwood	Sierra arching sedge (Rank 1B.2), Sierra blue grass (Rank 1B.3), Cantelow's lewisia (Rank 1B.2) Cooper's hawk and other nesting raptors and migratory birds (CDFW)
Ponderosa Pine	Sierra arching sedge (Rank 1B.2), Sierra blue grass (Rank 1B.3), Cantelow's lewisia (Rank 1B.2) Cooper's hawk and other nesting raptors and migratory birds (CDFW)
Sierran Mixed Conifer	Sierra arching sedge (Rank 1B.2), Sierra blue grass (Rank 1B.3), Cantelow's lewisia (Rank 1B.2) Cooper's hawk and other nesting raptors and migratory birds (CDFW)
Manmade Pond	Western pond turtle (CSC), California red-legged frog (ESA listed), migratory birds (CDFW)
Disturbed and Developed	Coast horned lizard (CSC), Townsend's big-eared bat (CSC)
Annual Grassland	Brownish beaked-rush (Rank 2B.2)
Wet Meadow	Brownish beaked-rush (Rank 2B.2) and finger rush (Rank 1B.1)

6.6.2 Evaluation of Impacts

The proposed Idaho-Maryland Mine Project within the Brunswick Area will create surface impacts to sensitive aquatic resources as outlined in Section 5.

Project development may permanently fill approximately 0.57 acres of mapped wetlands (see Table 4.0).

Project development may permanently impact approximately 237 linear feet (~0.062 acres) of mapped streams and temporarily impact approximately 56 linear feet (~0.041 acres) of mapped streams (see Table 5.0).

Specific to South Fork Wolf Creek, impacts are estimated to be 0.01 acres of permanent impacts due to the proposed outfall and 0.04 acres of temporary impacts due to culvert replacement within South Fork Wolf Creek (see Table 5.0).

The specific impacts to aquatic resources are detailed as follows:

IMPACT 1: Construction of treated mine water outfall to South Fork Wolf Creek.

The proposed treated mine water discharge pipe outfall will be placed within or adjacent to South Fork Wolf Creek. Construction of the outfall may cause ~15 linear feet of permanent impact (~0.01 acres) to the southern bank of the creek from placement of the pipe and modification of the stream bank to ensure adequate energy dissipation and erosion protection.

Placement of the discharge pipeline connecting the proposed outfall within the southern bank of the South Fork Wolf Creek may cause a "temporary impact" to the non-disturbance buffer zone during construction or placement of the pipeline. The pipeline has been routed along an existing access road to minimize the potential impacts to non-disturbance setback environments.

South Fork Wolf Creek (perennial stream) has a 100-foot non-disturbance buffer zone.

IMPACT 2: Treated water pipe placement will cross an ephemeral stream (E-1).

The proposed treated mine water discharge pipe is an aboveground pipe that will be located along an existing access road on the south side of South Fork Wolf Creek. The existing access road crosses the ephemeral stream feature E-1. A support structure will be constructed across the ephemeral stream (E-1) so that the pipe crosses over the 2ft- wide stream instead of through the stream which may cause a temporary impact to ~16 linear feet of the stream.

Riparian vegetation, if present along the existing access road, may be impacted from placement of the discharge pipe. The pipeline has been routed along an existing access road to minimize the potential impacts to riparian environments as well as the 50-foot non-disturbance buffer of the ephemeral stream. Portions of the existing access road are located within the 100-foot non-disturbance buffer zone of South Fork Wolf Creek.

Ephemeral stream E-1 has a 50-foot non-disturbance buffer zone.

IMPACT 3: Replacement of deteriorated culvert at South Fork Work Creek.

The deteriorated 48" buried culvert that runs underneath the Brunswick Industrial Site will be replaced and upgraded as part of the proposed project. It is estimated that the culvert replacement may have a temporary impact area of 40 ft. x 40 ft. (0.04 acres) within or adjacent to South Fork Wolf Creek. This would cause a temporary impact during replacement and existing conditions would be re-established once the culvert is replaced.

South Fork Wolf Creek (perennial stream) has a 100-foot non-disturbance buffer zone.

IMPACT 4: Permanent fill to small wetlands from construction and grading.

Construction and grading from surface facilities and the engineered fill industrial pad on the Brunswick Industrial Site will cause permanent impacts to ten (10) mapped wetland features (WM-1, WM-2, WM-3, MA-1, MA-2, MA-3, MA-4, MA-5, MA-6, and RI-1). The 10 wetland features consist of 3 meadow wetlands, 7 marsh wetlands, and 1 riparian wetland. It is estimated that ~0.57 acres of mapped wetlands will be permanently filled.

The impacted wetland features are small wetlands located in already developed or disturbed areas or immediately adjacent to developed or disturbed areas of the Brunswick Industrial Site. Wetland features MA-1 and MA-2 have developed in site drainage features, constructed by previous operations, that connect to culverts as part of the existing management of surface drainage on the site.

Wetland aquatic resources have a 100-foot non-disturbance buffer zone.

IMPACT 5: Site grading will encroach on intermittent stream (I-5).

Grading of the site for construction preparation will cause a permanent impact to ~34 linear feet of the intermittent stream feature I-5. This mapped intermittent stream feature originates from a culvert which transports surface drainage from the north-eastern portion of the Brunswick Industrial Site. The intermittent stream extends to a drainage gully which is identified as a riparian wetland. Proposed construction activities would require extension of the existing culvert so that flow of surface drainage is not interrupted.

Intermittent stream I-5 has a 50-foot non-disturbance buffer zone.

IMPACT 6: Engineered fill industrial pad will encroach on ephemeral stream (E-2).

Currently, the ephemeral stream feature E-2 transmits site drainage from the south-eastern hills and offsite drainage which eventually flows into South Fork Wolf Creek.

Development of the industrial pad with engineered fill material will cause surface disturbance on the eastern area of the site. The industrial pad will include a surface detention pond to manage storm-water drainage. The construction extents of the surface detention pond will cause a permanent impact to ~188 linear feet of ephemeral stream feature E-2. Following construction, site drainage will continue to drain to the lower reaches of ephemeral stream feature E-2 and subsequently South Fork Wolf Creek, similar to pre-construction conditions.

Ephemeral stream E-2 has a 50-foot non-disturbance buffer zone.

IMPACT 7: Repair of existing clay lined pond berm will require work in the 100-foot non-disturbance buffer near the head of South Fork Wolf Creek

It is expected that a segment of the berm of the existing clay lined pond will be excavated and rebuilt to remove pockets of sawdust not removed during historic construction. This segment of the pond berm is located adjacent to South Fork Wolf Creek and in the 100-foot non-disturbance buffer zone of South Fork Wolf Creek. This crest of the berm will be paved to provide a surfaced access road along the perimeter of the pond and a section of the pond berm is within the 100-foot non-disturbance buffer zone of South Fork Wolf Creek and the wetland meadow mapped adjacent to it. The paved perimeter access road will be cross sloped to drain water into the pond rather than towards the creek or wetland meadow.

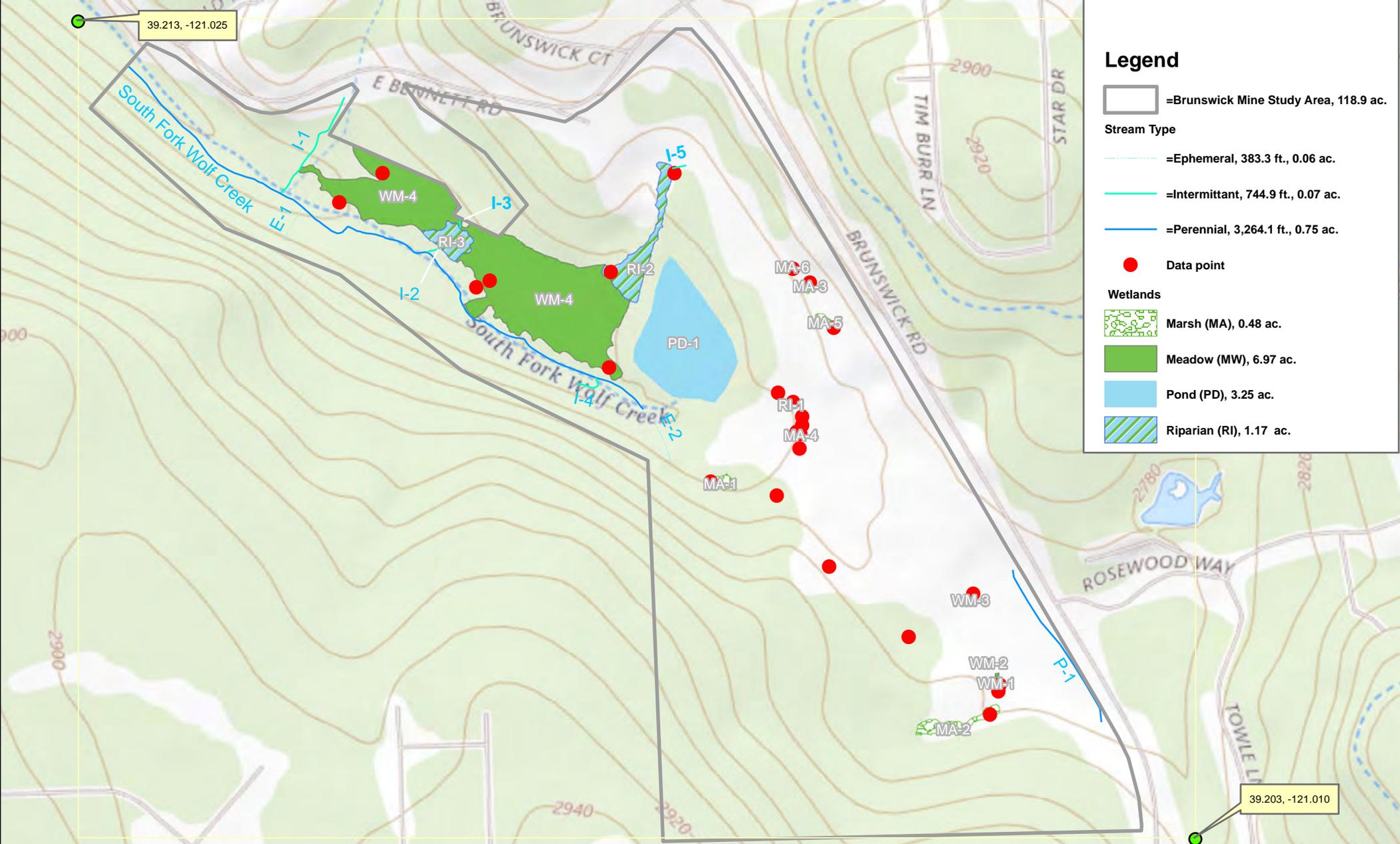
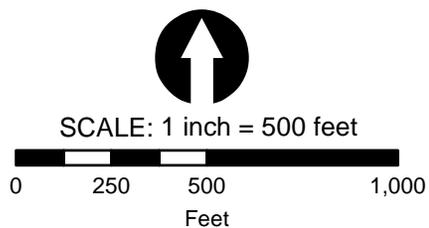


Figure. Brunswick Mine Study Area Aquatic Resources Overview, USGS basemap.

Grass Valley, CA (APNs 006-441-003, 006-441-004, 006-441-005, 006-441-034, 009-630-037 & 009-630-039)
 Grass Valley 7.5 minute USGS quadrangle
 T16N, R8E Section 36 &
 T16N, R9E Section 31

Coordinate System: NAD 83 Zone 10N
 Projection: Transverse Mercator
 Datum: D_North_American_1983



This delineation has been conducted in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the Western Mountains Regional Supplement (2010). The identification of ordinary high water mark (OHWM) was based on A Guide to Ordinary High Water Mark (OHWM) for Non-Perennial Streams in the Western Mountains (2014).

Created August 31, 2020.



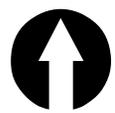
Legend

-  Project Area, 10.3 ac.
-  = Data point
- Wetlands**
-  = Roadside wetland, .09 ac.

Figure. East Bennett Road Right of Way

Grass Valley, CA
 Grass Valley 7.5 minute USGS quadrangle
 T16N, R8E Section 25

Coordinate System: NAD 83 Zone 10N
 Projection: Transverse Mercator
 Datum: D_North_American_1983



SCALE: 1 inch = 600 feet

This delineation has been conducted in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the Western Mountains Regional Supplement (2010). The identification of ordinary high water mark (OHWM) was based on A Guide to Ordinary High Water Mark (OHWM) for Non-Perennial Streams in the Western Mountains (2014).

Created January 1, 2019

7 RECOMMENDED MITIGATIONS AND CONDITIONS

Recommended mitigations and conditions for the Brunswick Area are based on an impact assessment of the Project Description outlined in Section 5 and the vegetation communities and aquatic resources mapped within the Brunswick Area (see Appendix C and Figure 3). A total of ~60 acres will be subject to surface use and/or development within the Brunswick Industrial Site.

The proposed disturbance within the Brunswick Area would have both direct and permanent impacts to ephemeral, intermittent, and perennial aquatic resources, as well as potential indirect impacts to these features and their non-disturbance buffers (see Table 4.0 and Table 5.0). Within the East Bennett Road ROW, potential temporary impacts from the construction of an NID potable water pipeline would be maintained within the pavement of the road and would have no impact on adjacent vegetation.

Minimization and mitigation measures are proposed to ensure that direct, indirect, permanent, and/or temporary disturbances do not cause a significant impact to the sensitive aquatic resources (watercourses, wetlands, and riparian areas) as defined by the Nevada County Land Use and Development Code. Therefore, with the implementation of the following minimization and mitigation measures, such impacts to the mapped aquatic resources, as well as any special-status plant and wildlife species that associate with such aquatic resources, within the Brunswick Area would be fully mitigated.

7.1 Mitigation Requirements for Aquatic Resources Protected Under the Federal Clean Water Act, by the State of California (CDFW), and Nevada County

7.1.1 Clean Water Act (CWA) Sections 404 and 401 Compliance

Each of the mapped wetland features and stream features included as part of the Brunswick Industrial Site and East Bennett Road ROW Aquatic Resources Delineation Report (Matuzak, 2020a) are assumed to fall under Corps jurisdiction pursuant to Section 404 of the CWA. The RWQCB pursuant to Section 401 of the CWA also has jurisdiction over areas subject to regulation by the Corps under Section 404 of the CWA.

A CWA Section 404 permit will be required for the proposed fill within the “waters of the U.S.,” including wetlands as outlined in Table 4.0 and Table 5.0. Given the proposed disturbance will include 0.5 acres or greater of fill within such CWA regulated features, the proposed disturbance would not meet the general conditions of any previously authorized Nationwide Permit and therefore, an Individual Permit would be required prior to the filling of 0.5 acres or greater of such CWA regulated features. As part of the

Individual Permit process a functional assessment of the wetlands and waters to be impacted by the proposed site disturbance should be conducted and based on the results of the functional assessment and coordination with the Corps, an approved Compensatory Mitigation Plan that mitigates for impacts to such CWA regulated features at a minimum of a 1:1 ratio is required. Compensatory mitigation can include but is not limited to the following: onsite and/or offsite wetland creation and/or restoration, payment of an in-lieu fee, and/or purchase of mitigation credits at an approved Corps wetland mitigation or conservation bank. Additionally, a Water Quality Certification under Section 401 of the CWA will be required by the RWQCB.

7.1.2 CDFW Streambed Alteration Agreement

The perennial, intermittent, and ephemeral streams within the Brunswick Area would likely fall under CDFW jurisdiction as these areas each contain a bed and bank. Any substantial alteration of a stream and vegetation growing within the bed and bank of such mapped streams within the Brunswick Area would most likely require a Streambed Alteration Agreement from the CDFW pursuant to Section 1600 *et. seq.* of the California Fish and Game Code prior to construction. This includes any disturbance within the South Fork Wolf Creek or other mapped streams within the Brunswick Area.

Table 5.0 outlines the proposed permanent and temporary impacts to streams mapped within the Brunswick Area and therefore, a CDFW Streambed Alteration Agreement will be applied for as part of the permitting process for the project. The CDFW permit will most likely state that any temporary impacts to the stream zones within the Brunswick Area, including riparian habitat growing within the bed and bank of a mapped stream, would be required to be restored to pre-construction contours and revegetated as needed. Site restoration would include all exposed/disturbed areas and access points within any stream as a result of the disturbance activities (pipeline, outfall, new culvert, etc.). These areas shall be restored using locally native grass and/or forb seeds, locally native grass plugs and/or a mix of quick growing sterile non-native grass with locally native grass/forb seeds. Seeded areas shall be covered with broadcast straw and/or seeded erosion control blankets. Additionally, a site revegetation plan would be required to be developed and approved by CDFW as part of a Streambed Alteration Agreement condition for the removal of native riparian trees growing within the bed and bank of any mapped stream within the Brunswick Area.

7.2 Subsequent Potential Impacts to Special-Status Species that Associate with Impacted Aquatic Resources

Several special-status species are known to associate with the types of wetland and stream habitats identified and mapped within the Brunswick Area as well as their non-disturbance buffer areas. Those special-status wildlife species include nesting birds, the

western pond turtle, California black rail, foothill yellow-legged frog, and California red-legged frog. Additionally, special-status plant species, such as the Sierra arching sedge, finger rush, brownish-beaked rush, and Scadden Flat checkerbloom are known to associate with the types of wetlands and stream habitats mapped within the Brunswick Area as well as their non-disturbance buffer areas (see Appendix F for a description of CNPS ranked plants and special-status species and their likelihood to occur within the Brunswick Area).

None of these special-status wildlife or plant species were identified during the field surveys conducted as part of the development of the Biological Resources Assessment for the Brunswick Area and the results of which are included in this Management Plan. However, given that these species have at least a limited potential to occur within the mapped streams and wetlands within the Brunswick Area and their non-disturbance buffers, mitigation measures outlined for those species within the Biological Resources Assessment for the Brunswick Area are incorporated by reference as part of this Management Plan and will be implemented should any of those species be found by pre-construction surveys prior to any proposed disturbance within the mapped wetlands, streams, and non-disturbance buffers to ensure that potential impacts to special-status species are avoided, minimized, and fully mitigated.

7.3 Management Plan Best Management Practices (BMPs)

ENCROACHMENT INTO THE NON-DISTURBANCE BUFFERS

Temporary impacts to ephemeral, intermittent, and perennial features mapped within the Brunswick Area include soil disturbance and potential erosion along the adjacent slopes. If such project related disturbance occurs within 50 feet of any ephemeral or intermittent stream or within 100 feet of any perennial stream or wetlands, then specific measures have been developed as part of this Management Plan to protect the non-disturbance buffers to such resources within the Brunswick Area. The mitigation measures outlined below should be implemented to avoid and minimize such impacts to the non-disturbance buffers of such resources. The applicant intends to construct all components of the proposed project in compliance with State and federal laws, as well as in compliance with Nevada County and the Nevada County Building Code.

Protected non-disturbance buffers within the Brunswick Area are associated with areas directly adjacent to the permanent and temporary impacts to intermittent and perennial stream and wetland resources within the Brunswick Areas, as included in Figure 3. Encroachment into the non-disturbance buffers of such resources could have an indirect impact on such protected resources and therefore, mitigation for encroachment into such non-disturbance buffers within the Brunswick Area is a requirement of this Management Plan.

MITIGATION FOR ENCROACHMENT INTO THE NON-DISTURBANCE BUFFERS

The mitigation measures listed below are intended for inclusion within the entirety of the proposed development (direct permanent and temporary impacts to protected aquatic resources) and/or disturbances within the non-disturbance buffers during and after construction. The intent of these measures is to minimize direct and indirect impacts to water quality during and following construction and the negative impacts that sedimentation and other hazardous substances can have on such protected aquatic resources. Such protections will be accomplished by implementing the following during and following construction:

- Limit construction to periods of extended dry weather and the dry summer season, if feasible;
- Establishing the areas around active stream channels and wetlands as Environmentally Sensitive Area (ESA) where those areas will not be impacted by construction or thereafter;
- No fill or dredge material will enter or be removed from any wetlands or streams except for those identified in Table 4.0 and Table 5.0 in this Management Plan during construction and thereafter;
- Use appropriate machinery and equipment to limit disturbance within and directly adjacent to these areas;
- Placement of soil erosion control devices (such as wattles, hay bales, etc.) between the protected aquatic resources (wetlands and streams) and the areas to be graded and disturbed to limit potential runoff and sedimentation into such protected resources;
- Dewatering of any streams that will be required to occur as part of the proposed disturbance within the Brunswick Area must include a Water Diversion Plan and be approved by CDFW prior to the implementation of such dewatering activities; and
- Implement Best Management Practices during and following construction.

REMEDATION AND RESTORATION OF SOUTH FORK WOLF CREEK

It is recommended that the pipeline and areas immediately adjacent to the outfall and rock or rip rap dissipation proposed within the southern bank of South Fork Wolf Creek be restored to pre-construction contours and revegetated immediately following construction. Any other areas of impacts within the 100-foot non-disturbance buffer to South Fork Wolf Creek, including the upgrade of the existing culvert where water daylights within the Brunswick Industrial Site as well as the riparian areas along the pipeline route connecting to the proposed outfall location, should also be restored to pre-

construction contours where feasible and replanted with native vegetation. The following is recommended to remediate and restore areas adjacent to South Fork Wolf Creek and other streams and wetlands within the Brunswick Area where native vegetation and trees will be removed within the non-disturbance buffers of such protected resources and their non-disturbance buffers:

- Placement of rock and rip rap along the embankment of the South Fork Wolf Creek should be minimized to reduce the footprint of such impacts to the perennial creek and its embankments;
- Some of the rock and rip rap can be placed at the top of the embankment of the South Fork Wolf Creek to protect the embankment from further erosion during restoration of the riparian zone and embankment on the southern side of the perennial stream.
- Plant willow cuttings from the adjacent willow trees and other native shrubs and riparian trees along the embankment and broadcast seed the embankment with local, native grass seed. A revegetation plan will be a requirement of the CDFW Streambed Alteration Agreement that will include impacts to the bed and bank, of any stream within the Brunswick Area. Implementation of General and Project Specific Conditions will be required for all permits for the proposed project.

Given the adjacent embankment areas contain dense stands of Himalayan blackberry shrubs within open areas along the bank of the stream, those shrubs will quickly establish themselves within the exposed embankment once the existing trees and vegetation layer is removed. The establishment of the Himalayan blackberry shrubs and willow stock cuttings will begin to establish a natural, long-term bank stabilization and will limit erosion and sedimentation.

IMPLEMENTATION OF BEST MANAGEMENT PRACTICES DURING CONSTRUCTION

To protect the intermittent and perennial resources covered under this Management Plan and their non-disturbance buffer areas, as well as water quality and downstream water resources, the applicant shall implement standard Best Management Practices during and after construction. These measures should include, but are not limited to:

- Minimize the number and size of work areas for equipment and spoil storage sites in the vicinity of any streams and wetlands. Place staging areas and other work areas outside of the 50-foot non-disturbance buffers of ephemeral and intermittent aquatic resources and 100-foot non-disturbance buffers of perennial aquatic resources.
 - The applicant shall exercise reasonable precaution to protect the aquatic resources within the Brunswick Area as well as the adjacent non-disturbance buffers of such aquatic resources from pollution with fuels, oils, and other harmful materials. Construction byproducts and pollutants such as oil, cement, and wash water shall be
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prevented from discharging into or near these resources and shall be collected for removal off the site. All construction debris and associated materials and litter shall be removed from the work site immediately upon completion.

- No equipment for vehicle maintenance or refueling shall occur within the 50-foot and 100-foot non-disturbance buffers. The contractor shall immediately contain and clean up any petroleum or other chemical spills with absorbent materials such as sawdust or kitty litter. For other hazardous materials, follow the cleanup instruction on the label.

Post Construction Erosion Control

Exposed bare soil along the embankment of South Fork Wolf Creek where the outfall and dissipation rip rap will occur as well as any exposed bare soil adjacent to the other mapped aquatic resources within the Brunswick Area, including their 50-foot and 100-foot non-disturbance buffers, should be protected against loss from erosion by the seeding of an erosion control mixture and restored with native grasses and mulching per Nevada County and regulatory agency guidelines (to be included in required permits prior to such disturbance within protected aquatic resources, see Appendix H for a potential native seed mix from Caltrans and the Nevada County Erosion Control Plan Standards). Non-native species that are known to invade wild lands, such as orchard grass, velvet grass, rose clover, winter and spring vetch, and wild oats should not be used as they displace native species.

Provide Copies of Mitigation Measures to Contractors

To ensure the proper and timely implementation of all mitigation measures contained in this Management Plan, as well as the terms and conditions of any other required permits, the applicant shall distribute copies of these mitigation measures and permit requirements to the contractors prior to grading and construction within the non-disturbance buffers. All contractors shall be completely familiar with the mitigation measures contained above and with the terms and conditions of all permits.

8 JUSTIFICATION TO SUPPORT MANAGEMENT PLAN

Consistent with the provisions of Sec. L-II 4.3.3.B, total avoidance of protected aquatic resources is not feasible given the constraints of the Brunswick Area and given the history of the Brunswick Industrial Site with past historic mining and lumber operations that have occurred. However, the disturbed and developed nature of the Brunswick Industrial Site is being taken advantage of as the largest percentage of the site to be impacted will be located within the areas of the site that are currently heavily developed and disturbed by historic land uses. Additionally, the project has been specifically designed to avoid the largest wet meadow wetlands within the northwestern section of the Brunswick Industrial Site, and they are not being impacted by the proposed disturbance. Therefore, given the topography, history of mining and timber activities, and existing level of disturbance and development within the Brunswick Area, total avoidance of sensitive aquatic resources is not feasible. However, the largest and least disturbed wetlands within the Brunswick Industrial Site will be avoided given the proposed disturbance will occur mostly within the larger developed and disturbed areas of the site where several smaller wetland and stream features will be permanently impacted by the proposed project.

Alternative project designs and their feasibility were considered as part of the overall project design. Several alternative project designs would have had greater levels of impact on aquatic resources and within the northwestern area of the Brunswick Industrial Site. However, the selected project design both minimizes impacts to aquatic resources and the permanent and temporary impacts are mostly proposed to occur within a largely developed and disturbed area of the site. Fewer, smaller, and more disturbed wetland features will be disturbed from the implementation of the proposed project compared to other project designs that have been considered within the Brunswick Area.

9 STATEMENT OF QUALIFICATIONS

Mr. Greg Matuzak, Principal and owner of Greg Matuzak Environmental Consulting LLC is a wetlands ecologist and wildlife biologist with 20 years of experience conducting aquatic resources delineations and biological resources assessments in Northern California. Mr. Matuzak is 40-hour Wetland Delineation Certified (Wetland Training Institute) and has conducted aquatic resources delineations for 100's of linear miles of projects and 1000s of acres of site development projects. Additionally, Mr. Matuzak has implemented special-status biological resources surveys and developed biological resources assessments and management plans for dozens of projects in Nevada County. Mr. Matuzak has lived and worked in Nevada County for over 13 years. Ms. Wendy Boes is a local Nevada County botanist and most recently worked for the Tahoe National Forest as a botanist. Ms. Boes is an independent consultant, GIS specialist, and conducts field data collection and GIS mapping for field related projects. Mr. Matuzak and Ms. Boes were responsible for the field data collection and assessment developed as part of the development of this Management Plan. Both Mr. Matuzak and Ms. Boes are on the Nevada County Planning Department's list of Qualified Biological Resources Consultants.

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Appendix A

Project Overview Area Figures



Grass Valley, CA
Grass Valley 7.5 minute USGS quadrangle
T16N, R8E Section 36 &
T16N, R9E Section 31

Coordinate System: NAD 83 Zone 10N
Projection: Transverse Mercator
Datum: D_North_American_1983

Figure. Brunswick Industrial Site



SCALE: 1 inch = 500 feet

Legend

 = Brunswick Industrial Site 118.93 ac.



Legend

- Project Area, 10.3 ac.
- = Data point
- Wetlands**
- = Roadside wetland, .09 ac.

Figure. East Bennett Road Right of Way Overview

Grass Valley, CA
 Grass Valley 7.5 minute USGS quadrangle
 T16N, R8E Section 25

Coordinate System: NAD 83 Zone 10N
 Projection: Transverse Mercator
 Datum: D_North_American_1983



SCALE: 1 inch = 600 feet

This delineation has been conducted in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the Western Mountains Regional Supplement (2010). The identification of ordinary high water mark (OHWM) was based on A Guide to Ordinary High Water Mark (OHWM) for Non-Perennial Streams in the Western Mountains (2014).

Created January 1, 2019

Appendix B

USDA Soils Maps

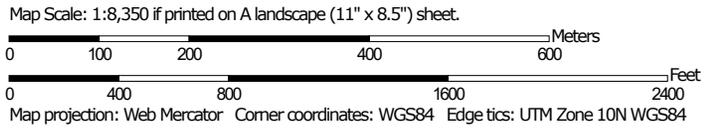
and

USDA Soils Descriptions

Soil Map—Nevada County Area, California



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Nevada County Area, California

Survey Area Data: Version 11, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 20, 2017—Aug 8, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AfC	Aiken loam, 9 to 15 percent slopes, high precip	12.91	10.9%
AfD	Aiken loam, 15 to 30 percent slopes, N Low Mid Montane	0.71	0.6%
AfE	Aiken loam, 30 to 50 percent slopes	17.7	14.9%
Ao	Alluvial land, clayey	13.8	11.7%
CmB	Cohasset loam, summits, 2 to 15 percent slopes	1.41	1.2%
CmC	Cohasset loam, shoulders, 3 to 20 percent slopes	24.7	20.9%
CmD	Cohasset loam, backslopes, 5 to 30 percent slopes	4.7	3.6%
CoD	Cohasset cobbly loam, 5 to 30 percent slopes	1.9	1.6%
Pr	Placer diggings	40.8	34.5%
SID	Sites silt loam, 15 to 30 percent slopes, N low montane	0.3	0.2%
Totals for Area of Interest		118.93	100.0%

Soil Map—Nevada County Area, California



Map Scale: 1:10,200 if printed on A landscape (11" x 8.5") sheet.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Nevada County Area, California

Survey Area Data: Version 11, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 20, 2017—Aug 8, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AfC	Aiken loam, 9 to 15 percent slopes, high precip	0.3	3.8%
AfE	Aiken loam, 30 to 50 percent slopes	0.6	7.0%
BoD	Boomer loam, hard bedrock, 7 to 28 percent slopes	2.7	24.9%
BrD	Boomer, hard bedrock - Rock outcrop complex, 5 to 30 percent slopes	0.2	1.9%
BrE	Boomer, hard bedrock - Rock outcrop complex, 15 to 60 percent slopes	1.0	12.8%
CmD	Cohasset loam, backslopes, 5 to 30 percent slopes	1.1	10.3%
Ct	Cut and fill land	1.1	9.1%
Pr	Placer diggings	1.1	8.7%
SfD	Sierra sandy loam, 15 to 30 percent slopes	0.1	0.7%
SID	Sites silt loam, 15 to 30 percent slopes, N low montane	2.1	20.8%
Totals for Area of Interest		10.3	100.0%

USDA Soil Mapping Units Descriptions for the Brunswick Area

Brunswick Industrial Site

The USDA Soil Survey Mapper (USDA, 2019) identifies several soil types within the Brunswick Industrial Site. USDA soil mapping for the Brunswick Industrial Site is included in Appendix B and indicates that the Brunswick Industrial Site includes 10 soil types: Aiken loam on 9 to 15 percent slopes (AfC), Aiken loam on 15 to 30 percent slopes (AfD), Aiken loam on 30 to 50 percent slopes (AfE), Alluvial land, clayey (Ao), Cohasset loam, summits, on 2 to 15 percent slopes (CmB), Cohasset loam, shoulders, on 3 to 20 percent slopes (CmC), Cohasset loam, backslopes, on 5 to 30 percent slopes (CmD), Cohasset cobbly loam on 5 to 30 percent slopes (CoD), Placer diggings (Pr), and Sites loam on 15 to 30 percent slopes (SID). These soil types are described in detail below and are shown in Appendix B:

- **Aiken loam on 9 to 15 percent slopes (AfC).** The Aiken series consists of deep, well-drained soils typically occurring on ridgetops and side slopes of andesitic flows. These soils form from the weathering of volcanic rock. Drainage is moderately slow with a medium rate of surface runoff. The Aiken series is not hydric. A typical profile for this series consists of dark to reddish brown (5YR 3/3) loam from 0 to 11 inches. This layer is underlain by a yellowish red (5YR 4/6) loam from 11 to 21 inches. A dark red (2.5 YR 3/6) loam is present from 21 to 29 inches followed by a clay loam layer of the same color from 29 to 42 inches. From 42 to 52 inches is yellowish red (5YR 4/6) clay loam which is underlain by a reddish brown (5YR 4/4) clay loam. This layer is underlain by bedrock.
- **Aiken loam on 15 to 30 percent slopes (AfD).** The description of this soil is the same as the AfC description, only it is found on steeper slopes.
- **Aiken loam on 30 to 50 percent slopes (AfE).** The description of this soil is the same as the AfC description, only it is found on steeper slopes than AfD soils.
- **Alluvial land, clayey (Ao).** This series consists of moderately well-drained soils in floodplains and drainages. These soils formed from alluvium derived from granitic or mixed metabasic rocks. Permeability and runoff are both slow. This is a hydric soil. A typical soil for alluvial soils consists of 3 to 10 inches of sandy loam or loam underlain by 30 to 45 inches of a clay loam.
- **Cohasset loam, summits, on 2 to 15 percent slopes (CmB).** The Cohasset series consists of well drained soils on ridgetops and side slopes. These soils formed from weathered volcanic rock. Drainage is moderate and runoff is slow to rapid.

These soils are not hydric. A typical profile for the Cohasset series consists of pine and fir needles from 0 to 3 inches. This layer is underlain by a dark reddish brown (ranges from 5YR 3/2, 3/3, 3/4) cobbly loam from 0 to 24 inches. This layer is underlain by a dark reddish brown (5YR 3/4 or 4/4) cobbly clay loam from 24 to 96 inches. At 96 inches is a weathered andesitic conglomerate.

- **Cohasset loam, shoulders, on 3 to 20 percent slopes (CmC).** The description of this soil is the same as the CmB description, only it is found on steeper slopes and shoulders.
- **Cohasset loam, backslopes, on 5 to 30 percent slopes (CmD).** The description of this soil is the same as the CmB description above, only it is found on steeper slopes and backslopes.
- **Cohasset cobbly loam on 5 to 30 percent slopes (CoD).** The description of this soil is the same as the CmB description above, only it is found on steeper slopes and is a cobbly loam rather than a Cohasset loam like CmB, CmC, and CmD above, containing a mixture of cobbles within the loamy soil.
- **Placer diggings (Pr).** The Placer diggings series consists of remnant tertiary river deposits associated with hydraulic mining and placer mining operations as well natural deposits within stream channels. Areas with this soil type are 90 to 100 percent rock, cobble or gravel. 50 to 75 percent of these lands have a mixture of rock, cobbles, gravel and soil. This soil contains unnamed hydric inclusions in drainages and depressions.
- **Sites loam on 15 to 30 percent slopes (SID).** The Sites series consists of well drained soils that occur in mountain uplands. The soils formed from weathered residuum of metabasic and metasedimentary rocks. Drainage is moderately soil and runoff is slow to very high. This soil is not hydric. A typical profile for this complex consists of dark reddish brown loam (5YR 3/4) from 0 to 3 inches. This layer is underlain by yellowish red loam (5YR 4/6) from 3 to 12 inches. From 12 to 23 inches is a layer of red (2.5 YR 4/6) clay loam. This layer is underlain by red (10R 4/6) clay from 23 to 56 inches and red (10R 4/8) light clay from 53 to 69 inches. From 68 to 78 inches is a red (2Y 4/8) clay loam underlain at 78 inches by a layer of weathered metasedimentary rock.

East Bennett Road ROW Section of Brunswick Area

The USDA Soil Survey Mapper (USDA, 2019) indicates that the East Bennett Road ROW includes 10 soil types: Aiken loam on 9 to 15 percent slopes (AfC), Aiken loam on 30 to 50 percent slopes (AfE), Boomer loam, hard bedrock, 7 to 28 percent slopes (BoD), Boomer-Rock outcrop complex on 5 to 30 percent slopes (BrD), Boomer-Rock outcrop complex on 30 to 50 percent slopes (BrE), Cohasset loam on 15 to 30 percent slopes (CmD), Cut and fill land (Ct), Placer diggings (Pr), Sierra sandy loam on 15 to 30 percent slopes (SfD), and Sites loam on 15 to 30 percent slopes (SID). These soil types are described in detail below and are shown in Appendix B:

- **Aiken loam on 9 to 15 percent slopes (AfC).** The soil series description for Aiken loam on 9 to 15 percent slopes is above within the descriptions for the Brunswick Industrial Site.
- **Aiken loam on 30 to 50 percent slopes (AfE).** The soil series description for Aiken loam on 30 to 50 percent slopes is above within the descriptions for the Brunswick Industrial Site.
- **Boomer-Rock outcrop complex on 5 to 30 percent slopes (BrD).** The Boomer-Rock outcrop series consists of well-drained soils in upland areas. These soils formed from weathered metavolcanic rock. Drainage is moderately slow and runoff is slow to rapid. These soils are not hydric. A typical profile for this series consists of a brown (5YR 3/4) gravelly loam from 0 to 11 inches. This layer is underlain by a dark reddish brown (2.5YR 3/4) loam from 11 to 18 inches. From 18 to 29 inches is a dark red (2.5YR 3/6) clay loam layer which is underlain by a reddish yellow clay loam to 33 inches. This layer is underlain by a yellowish red (SYR 4/8) clay loam with dark red (2.5 YR 3/6) films from 29 to 37 inches followed by a hard fractured diabase at 47 inches.
- **Boomer-Rock outcrop complex on 30 to 50 percent slopes (BrE).** This soil description is the same as for BrD but is found on steeper slopes.
- **Boomer loam, hard bedrock, 7 to 28 percent slopes (BoD).** This soil description is similar to BrD described above. Runoff is medium to rapid on this soil.
- **Cohasset loam on 15 to 30 percent slopes (CmD).** The soil series description for Cohasset loam on 15 to 30 percent slopes is above within the descriptions for the Brunswick Industrial Site.
- **Cut and fill land (Ct).** This soil type consists of areas that have been altered by activities other than mining or milling such that there are no intact soil characteristics. This soil is not hydric.

- **Placer diggings (Pr).** The soil series description for Placer diggings is above within the descriptions for the Brunswick Industrial Site.
- **Sierra sandy loam on 15 to 30 percent slopes (SfD).** The Sierra series consists of deep to very deep, well drained soils that formed in material weathered from intrusive igneous rocks. Sierra soils are on foothills and have slopes of 0 to 70 percent. The typical profile for this type of soil from 0 to 8 inches is brown (7.5YR 5/4) coarse sandy loam, dark reddish brown (5YR 3/4) moist; massive; slightly hard, friable; many very fine roots; many very fine and fine pores; moderately acid (pH 5.7); clear smooth boundary. From 8 to 20 inches it is known to be reddish brown (5YR 5/4) loam, yellowish red (5YR 3/6) moist; massive; hard, friable, slightly sticky, slightly plastic; many very fine roots; many very fine, common fine, few medium and coarse pores; few thin discontinuous clay films line pores, colloids mainly bridging mineral grains; moderately acid (pH 5.9); gradual smooth boundary.
- **Sites loam on 15 to 30 percent slopes (SID).** The soil series description for Sites loam is above within the descriptions for the Brunswick Industrial Site.

Appendix C

Vegetation Community Map

and

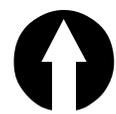
Vegetation Community Descriptions



Figure. Vegetation Communities Within in the Brunswick Industrial Site

Grass Valley, CA
 Grass Valley 7.5 minute USGS quadrangle
 T16N, R8E Section 36 &
 T16N, R9E Section 31

Coordinate System: NAD 83 Zone 10N
 Projection: Transverse Mercator
 Datum: D_North_American_1983



SCALE: 1 inch = 500 feet

Legend

= Brunswick Industrial Site	Manmade Pond	Sierran Mixed Conifer
Vegetation Type	Montane Hardwood-Conifer	Wet Meadow
Annual Grassland	Montane Hardwood	
Developed	Ponderosa Pine	
Disturbed		

Description of Mapped Vegetation Communities for the Brunswick Area

Developed

The entirety of the East Bennett Road ROW is considered developed given it contains pavement and shoulders that include fill material used as part of the construction of the road. In addition, the area connecting the northwestern end of East Bennett Road with the Centennial Industrial Site is also considered developed given the paved and gravel access as well as the historic industrial uses within that area.

Within the Brunswick Industrial Site, a large portion of the eastern section of the site is mapped as developed given it contains asphalt, gravel, pavement, and historic lumber mill infrastructure. The areas within the Brunswick Industrial Site mapped as developed contain little to no vegetation and the sparse vegetation present is considered ruderal and dominated by non-native and mostly invasive grassland species. The central area of the mapped developed section of the Brunswick Industrial Site contains artificial depressions that include some wetland and riparian species given the ponding of water that occurs within those artificial topographical low areas within the developed eastern section of the site.

Disturbed

A small area within the northeast corner of the Brunswick Industrial Site and a large area within the southern/southeastern section of the Brunswick Industrial Site are mapped as disturbed. Those areas contain a mix of fill material, asphalt, and gravel that have created a mix of non-native ruderal grassland vegetation and areas of barren ground. The southern disturbed area also contains some historic artificial depressions that include some wetland and riparian species given the ponding of water that occurs within those artificial topographical low areas, but those areas are dominated mostly by invasive Himalayan blackberry shrubs (*Rubus armenicus*).

Montane Hardwood

Montane hardwood habitat is identified within the Brunswick Industrial within and adjacent to a drainage area within the northeastern section of the site. Montane hardwood is characterized here by stands of an overstory of native oak trees mixed with some riparian species (*Salix* sp.). There is often homogeneity in the canopy structure, and canopy closure is variable between seasons as the dominant overstories species is deciduous, ranging from 5-45%. Due to the historic disturbance, there is abundant Himalayan blackberry in the understory along with other nonnatives including bristly dogtail (*Cynosurus echinatus*) and hedgenettle (*Torilis arvensis*).

Montane Hardwood-Conifer

Montane hardwood-conifer habitat in the Sierra Nevada occurs at elevations between 1,000 and 4,000 feet above MSL and is comprised of a mosaic of hardwoods and conifers. The Brunswick Industrial Site is likely a midpoint on the gradient between hardwood forest and conifer forest containing both hardwood and conifer tree species, often in a mosaic pattern with small pure stands of conifers interspersed with small stands of hardwoods. Species associated with montane hardwood-conifer include ponderosa pine, California black oak, canyon live oak, madrone and Douglas fir. This vegetation community has been mapped within the northwestern section of the Brunswick Industrial Site along the South Fork Wolf Creek corridor and in two smaller areas along the southern side of East Bennett Road.

Annual Grassland

Annual grassland are open vegetation types that are dominated by annual plant species, often nonnative. These species can occur within the understory of other vegetation types like oak woodlands, but where annual grasslands are mapped there is little to no overstory or shrub cover. This vegetation type is common within the northwestern section of the Brunswick Industrial Site where there has been historic disturbance and little to no water source other than rainfall. The fall rainfall will spark germination and plants will grow through the cool months and in spring will grow rapidly and flower, fruit and senesce. Common to the environmental setting of this habitat type are yellow star thistle (*Centaurea solstitialis*), garden burnett (*Poterium sanguisorba*), soft chess (*Bromus hordeaceus*), bisnaga (*Ammi visnaga*), and patches of Himalayan blackberry.

Ponderosa Pine

Ponderosa pine (*Pinus ponderosa*) habitat is found within the northeastern corner of the Brunswick Industrial Site. The structure and composition of the ponderosa pine forest varies widely according to the amount of soil moisture available during the summer. The canopy closure tends to be low in the areas ranging from 5-35%. In the Brunswick Industrial Site, California black oak (*Quercus kelloggii*), madrone (*Arbutus menziesii*), foothill pine (*Pinus sabieniana*), and incense cedar (*Calocedrus decurrens*) are common associates of ponderosa pine. A variety of understory shrub species occur throughout the ponderosa pine forest. In the Project areas the more common understory shrubs are white leaf manzanita (*Arctostaphylos viscida* ssp. *viscida*), poison oak (*Toxicodendron diversilobum*), and honeysuckle (*Lonicera hispidula*). These understory shrubs form often dense, impenetrable stands, especially on open rocky slopes, and in areas of recent disturbance.

Sierran Mixed Conifer

The Sierran mixed conifer forest is generally a multi strata forest dominated by conifers with hardwood as a component of the understory. This vegetation type is found along the hillslope on the western and southern portions of the Brunswick Industrial Site. The forest here is more mesic, occurring on mostly east facing slopes. It is dominated by Douglas fir, incense cedar, and black oak. It has high canopy closure. It often has a midstory strata of madrone, hazelnut (*Corylus cornuta ssp. californica*) and younger black oak. The understory has high litter cover and Himalayan blackberry and honeysuckle area common in the understory.

Montane Riparian

A structural gradient generally occurs from neighboring vegetation into montane riparian, resulting in oaks or pines grading in with the more riparian species. This vegetation type is characterized by two different ecological conditions, (1) placer diggings where small depressions within the disturbed and developed mapped areas of the Brunswick Industrial Site pond water long enough for riparian species such as willows (*Salix* sp.) to occur and (2) along a narrow stretch of the South Fork Wolf Creek.

The montane riparian in the placer diggings and areas created from earth movement are characterized by black cottonwood (*Populus tremuloides*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), and occasionally ponderosa pine in the overstory. Dense thickets are often resultant with Himalayan blackberry and Baltic rush (*Juncus balticus ssp. atar*) in the herbaceous layer.

The montane riparian vegetation along both sides of the South Fork Wolf Creek is dominated by white alder (*Alnus rhombifolia*), red willow (*Salix laevigata*), and arroyo willow (*Salix lasiolepis*) with other overstory species from adjacent vegetation types, including California black oak, pine and Douglas fir. The understory of montane riparian along the stream is dominated by Himalayan blackberry. This vegetation type forms a very narrow band along both sides of the creek between the mapped montane conifer-hardwood and annual grassland and wet meadow vegetation communities.

Wet Meadow

Wet meadows generally contain a single vegetation stratum and are generally dominated by forbs and graminoids. Shrub and trees are sometimes present but generally make up a small portion of this vegetation type. This is typically a diverse plant community driven by hydrologic influences. The wet meadows in the northwestern section of the Brunswick Industrial Site are within areas mapped as alluvial, clayey soil types. These wet meadows are characterized by *Agrostis*, *Juncus* spp., Baltic rush, and common velvet grass (*Holcus lanatus*).

Freshwater Emergent Marsh Wetlands

Freshwater emergent marsh wetlands are characterized by hydrophyllic plants and generally standing water. All emergent wetlands have soils that are saturated to the extent that the soils are always anaerobic. There are freshwater emergent marsh wetlands mapped within the Brunswick Industrial Site and is found in small depressional areas mostly within the areas mapped as developed or disturbed. This habitat type within the Brunswick Industrial Site is dominated by arroyo willow, red willow, and pacific rush (*Juncus effuses* ssp. *pacificus*).

Appendix D

Plants Observed During Site Surveys

VASCULAR PLANTS OCCURRING IN BRUNSWICK AREA

Scientific Name	Common Name	Origin	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Acer macrophyllum</i>	Bigleaf maple	Native	-	FACU	-
<i>Acer negundo</i>	Boxelder	Native	-	FAC	-
<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish lotus	Native	-	FACU	-
<i>Adenocaulon bicolor</i>	Trail plant	Native	-	-	-
<i>Aegilops triuncialis</i>	Goatgrass	non-native (invasive)	-	-	High
<i>Agoseris retrorsa</i>	Spear leaved agoseris	Native	-	-	-
<i>Agrostis</i> sp.	-	-	-	-	-
<i>Ailanthus altissima</i>	Tree of heaven	non-native (invasive)	-	FACU	Moderate
<i>Aira caryophyllea</i>	Silvery hairgrass	non-native (invasive)	-	FACU	-
<i>Alnus rhombifolia</i>	White alder	Native	-	FACW	-
<i>Ammi visnaga</i>	Bisnaga	non-native	-	-	-
<i>Andropogon</i> sp.	-	-	-	-	-
<i>Arbutus menziesii</i>	Madrono	Native	-	-	-
<i>Arctostaphylos viscida</i>	Whiteleaf manzanita	Native	-	-	-
<i>Asyneuma prenanthoides</i>	California harebell	Native	-	-	-
<i>Avena</i> sp.	-	-	-	-	-
<i>Baccharis pilularis</i>	Coyote brush	Native	-	-	-
<i>Berberis aquifolium</i> var. <i>aquifolium</i>	Oregon grape	Native	-	FACU	-
<i>Bromus diandrus</i>	Ripgut brome	non-native (invasive)	-	-	Moderate
<i>Bromus hordeaceus</i>	Soft chess	non-native (invasive)	-	FACU	Limited
<i>Bromus madritensis</i>	Foxtail chess, foxtail brome	non-native	-	FACU	-
<i>Bromus suksdorfii</i>	Suksdorf's brome grass	Native	-	-	-

Scientific Name	Common Name	Origin	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Bromus tectorum</i>	Downy chess	non-native (invasive)	-	-	High
<i>Calocedrus decurrens</i>	Incense cedar	Native	-	-	-
<i>Calycanthus occidentalis</i>	Spicebush	Native	-	FAC	-
<i>Calystegia occidentalis ssp. occidentalis</i>	Modoc morning glory	Native	-	-	-
<i>Carex feta</i>	Green sheathed sedge	Native	-	FACW	-
<i>Ceanothus integerrimus</i>	Deer brush	Native	-	-	-
<i>Centaurea solstitialis</i>	Yellow starthistle	non-native (invasive)	-	-	High
<i>Chamaebatia foliolosa</i>	Sierran mountain misery	Native	-	-	-
<i>Chondrilla juncea</i>	Skeleton weed	non-native (invasive)	-	-	Moderate
<i>Cichorium intybus</i>	Chicory	non-native	-	FACU	-
<i>Cirsium vulgare</i>	Bullthistle	non-native (invasive)	-	FACU	Moderate
<i>Cornus nuttallii</i>	Mountain dogwood	Native	-	FACU	-
<i>Cornus sericea ssp. occidentalis</i>	Western dogwood	Native	-	FACW	-
<i>Cornus sessilis</i>	Western cornelian cherry	Native	-	FAC	-
<i>Cortaderia jubata</i>	Andean pampas grass	non-native (invasive)	-	FACU	High
<i>Corylus cornuta ssp. californica</i>	Beaked hazelnut	Native	-	FACU	-
<i>Crataegus monogyna</i>	Hawthorn	non-native (invasive)	-	FAC	Limited
<i>Croton setiger</i>	Turkey-mullein	Native	-	-	-
<i>Cynodon dactylon</i>	Bermuda grass	non-native (invasive)	-	FACU	Moderate
<i>Cynosurus echinatus</i>	Dogtail grass	non-native (invasive)	-	-	Moderate
<i>Cyperus eragrostis</i>	Tall cyperus	Native	-	FACW	-
<i>Cytisus scoparius</i>	Scotch broom	non-native (invasive)	-	-	High

Scientific Name	Common Name	Origin	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Dactylis glomerate</i>	Orchardgrass	non-native (invasive)	-	FACU	Limited
<i>Danthonia californica</i>	California oatgrass	Native	-	FAC	-
<i>Deschampsia elongata</i>	Hairgrass	Native	-	FACW	-
<i>Dicentra Formosa</i>	Pacific bleedinghearts	Native	-	FACU	-
<i>Elymus caput-medusae</i>	Medusa head	non-native	-	-	-
<i>Elymus glaucus</i>	Blue wildrye	Native	-	FACU	-
<i>Elymus hispidus</i>	Intermediate wheatgrass	non-native	-	-	-
<i>Epilobium brachycarpum</i>	Willow herb	Native	-	-	-
<i>Epilobium densiflorum</i>	Willow herb	Native	-	FACW	-
<i>Festuca arundinacea</i>	Reed fescue	non-native (invasive)	-	FAC	Moderate
<i>Festuca occidentalis</i>	Western fescue	Native	-	-	-
<i>Fraxinus latifolia</i>	Oregon ash	Native	-	FACW	-
<i>Galium triflorum</i>	Sweet bedstraw	Native	-	FACU	-
<i>Gnaphalium palustre</i>	Lowland cudweed	Native	-	FACW	-
<i>Goodyera oblongifolia</i>	Rattlesnake plantain	Native	-	FACU	-
<i>Hedera helix</i>	English ivy	non-native (invasive)	-	FACU	-
<i>Holcus lanatus</i>	Common velvetgrass	non-native (invasive)	-	FAC	Moderate
<i>Hypericum perforatum ssp. perforatum</i>	Klamathweed	non-native	-	FACU	-
<i>Ilex aquifolium</i>	Holly	non-native (invasive)	-	FACU	Moderate
<i>Juncus balticus ssp. ater</i>	Baltic rush	Native	-	FACW	-
<i>Juncus bufonius</i>	Common toad rush	Native	-	FACW	-
<i>Juncus effusus ssp. pacificus</i>	Pacific rush	Native	-	FACW	-
<i>Kickxia elatine</i>	Sharp point fluellin	non-native	-	FAC	-
<i>Lactuca serriola</i>	Prickly lettuce	non-native (invasive)	-	FACU	-
<i>Lactuca sp.</i>	-	-	-	-	-
<i>Lathyrus latifolius</i>	Sweet pea	non-native	-	-	-

Scientific Name	Common Name	Origin	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Lathyrus nevadensis</i> var. <i>nevadensis</i>	Sierra nevada pea	Native	-	-	-
<i>Lilium humboldtii</i> ssp. <i>humboldtii</i>	Humboldt lily	Native	Rank 4.2	-	-
<i>Lonicera hispidula</i>	Pink honeysuckle	Native	-	FACU	-
<i>Lotus corniculatus</i>	Bird's foot trefoil	non-native (invasive)	-	FAC	-
<i>Lysimachia latifolia</i>	Pacific starflower	Native	-	FACW	-
<i>Madia gracilis</i>	Gumweed	Native	-	-	-
<i>Maianthemum racemosum</i>	Feathery false lily of the valley	Native	-	FAC	-
<i>Marrubium vulgare</i>	White horehound	non-native (invasive)	-	FACU	Limited
<i>Matricaria chamomilla</i>	German chamomile	non-native	-	-	-
<i>Melilotus albus</i>	White sweetclover	non-native (invasive)	-	-	-
<i>Mentha spicata</i>	Spearmint	non-native	-	FACW	-
<i>Mimulus guttatus</i>	Yellow monkey flower	Native	-	OBL	-
<i>Petrorhagia dubia</i>	Windmill pink	non-native	-	-	-
<i>Phytolacca americana</i> var. <i>Americana</i>	American pokeweed	non-native	-	FACU	-
<i>Pinus lambertiana</i>	Sugar pine	Native	-	-	-
<i>Pinus ponderosa</i>	Yellow pine	Native	-	FACU	-
<i>Piperia transversa</i>	Mountain piperia	Native	-	-	-
<i>Plantago lanceolata</i>	Ribwort	non-native (invasive)	-	FACU	Limited
<i>Polygala cornuta</i>	Sierra milkwort	Native	-	FACW	-
<i>Polypogon monspeliensis</i>	Annual beard grass	non-native (invasive)	-	FACW	Limited
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Cottonwood	Native	-	FAC	-
<i>Potamogeton</i> sp.	-	-	-	-	-
<i>Poterium sanguisorba</i>	Garden burnet	non-native	-	UPL	-

Scientific Name	Common Name	Origin	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Prosartes hookeri</i>	Drops of gold	Native	-	-	-
<i>Prunella vulgaris</i>	Self heal	Native	-	FACU	-
<i>Prunus sp.</i>	-	-	-	-	-
<i>Pseudotsuga menziesii var. menziesii</i>	Douglas fir	Native	-	FACU	-
<i>Pteridium aquilinum var. pubescens</i>	Western bracken fern	Native	-	FACU	-
<i>Pyracantha sp.</i>	-	-	-	-	-
<i>Quercus chrysolepis</i>	Gold cup live oak	Native	-	-	-
<i>Quercus kelloggii</i>	California black oak	Native	-	-	-
<i>Ribes roezlii</i>	Sierra gooseberry	Native	-	-	-
<i>Robinia pseudoacacia</i>	Black locust	non-native (invasive)	-	FACU	Limited
<i>Rosa canina</i>	Dog rose	non-native	-	-	-
<i>Rosa gymnocarpa</i>	Wood rose	Native	-	FACU	-
<i>Rosa rubiginosa</i>	Sweet brier	non-native	-	FACW	-
<i>Rubus armeniacus</i>	Himalayan blackberry	non-native (invasive)	-	FACU	High
<i>Rubus leucodermis</i>	White bark raspberry	Native	-	FACU	-
<i>Rubus parviflorus</i>	Thimbleberry	Native	-	FACU	-
<i>Rubus ursinus</i>	California blackberry	Native	-	FACU	-
<i>Rumex acetosella</i>	Sheep sorrel	non-native (invasive)	-	FACU	Moderate
<i>Rumex crispus</i>	Curly dock	non-native (invasive)	-	FAC	Limited
<i>Salix exigua</i>	Narrowleaf willow	Native	-	FACW	-
<i>Salix gooddingii</i>	Gooding's willow	Native	-	FACW	-
<i>Salix laevigata</i>	Polished willow	Native	-	FACW	-
<i>Salix lasiandra</i>	Pacific willow	Native	-	FACW	-
<i>Salix lasiolepis</i>	Arroyo willow	Native	-	FACW	-
<i>Salix lutea</i>	Yellow willow	Native	-	OBL	-
<i>Sambucus nigra ssp. caerulea</i>	Blue elderberry	Native	-	FACU	-

Scientific Name	Common Name	Origin	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Spartium junceum</i>	Spanish broom	non-native (invasive)	-	-	High
<i>Spiranthes porrifolia</i>	Western ladies tresses	Native	-	FACW	-
<i>Symphoricarpos albus var. laevigatus</i>	Snowberry	Native	-	FACU	-
<i>Taraxacum officinale</i>	Red seeded dandelion	non-native (invasive)	-	FACU	-
<i>Taxus brevifolia</i>	California yew	Native	-	FACU	-
<i>Torilis arvensis</i>	Field hedge parsley	non-native (invasive)	-	-	Moderate
<i>Toxicodendron diversilobum</i>	Poison oak	Native	-	FAC	-
<i>Tragopogon dubius</i>	Goat's beard	non-native (invasive)	-	-	-
<i>Trillium angustipetalum</i>	Narrow petaled wakerobin	Native	-	-	-
<i>Typha domingensis</i>	Cattail	Native	-	OBL	-
<i>Typha latifolia</i>	Boradleaf cattail	Native	-	OBL	-
<i>Verbascum blattaria</i>	Moth mullein	non-native	-	UPL	-
<i>Verbascum thapsus</i>	Woolly mullein	non-native (invasive)	-	FACU	Limited
<i>Vicia villosa</i>	Hairy vetch	non-native (invasive)	-	-	-
<i>Vinca major</i>	Vinca	non-native (invasive)	-	-	Moderate
<i>Woodwardia fimbriata</i>	Western chain fern	Native	-	-	-

Appendix E

Photo Log

Photos of the December 2018 and July/August 2019 Surveys of the Brunswick Site



Photo 1: Looking south and southeast within the Brunswick Industrial Site. Forested area is mapped as Sierran Mixed Conifer vegetation community type.



Photo 2: Southern/southeastern section of the Brunswick Industrial Site. Forested area is mapped as Sierran Mixed Conifer vegetation community type.



Photo 3: Eastern section of the Brunswick Industrial Site looking northeast from southern area of the site. The large area containing mostly asphalt is mapped as developed.



Photo 4: Mapped Wet Meadow Wetland within the area mapped as disturbed within the Brunswick Industrial Site.



Photo 5: Mapped freshwater marsh wetland mapped within the southwestern area of the Brunswick Site. Soils were saturated and contained characteristics of hydric soils.



Photo 6: Mapped freshwater marsh wetland just south of the South Fork Wolf Creek culvert outlet. Wetland area contains standing water and dominated by freshwater marsh wetland hydrophytic vegetation.



Photo 7: Mapped South Fork of Wolf Creek with origination from outside the Brunswick Industrial Site. Water present within the stream channel coming from existing culvert.



Photo 8: Existing culvert daylights within the Brunswick Industrial Site at the South Fork Wolf Creek just upstream from Photo 7.



Photo 9: Large mapped manmade pond within the Brunswick Industrial Site. Historical pond used during operation of the mill.



Photo 10: Area mapped as disturbed within the central west section of the Brunswick Industrial Site. This area contains remnants of historic impacts to the site.



Photo 11: Mapped riparian wetland within the central section of the Brunswick Industrial Site that is mapped as disturbed within the vegetation community map.



Photo 12: Small freshwater marsh wetland within the eastern, developed section of the Brunswick Industrial Site. Water runs off of the adjacent Brunswick Road into the site.



Photo 13: Large area of asphalt within the eastern section of the Brunswick Site is mapped as developed with ponderosa pine vegetation community mapped adjacent.



Photo 14: Mapped wet meadow vegetation community within the northwestern open section of the Brunswick Industrial Site. Photo taken in August 2019.



Photo 15: Wet meadow vegetation community with South Fork Wolf Creek along the left edge of the wet meadow and montane hardwood-conifer vegetation community along left edge of the photo within the northwestern section of the Brunswick Industrial Site.



Photo 16: Edge of mapped annual grassland and montane hardwood vegetation communities and mapped ponderosa pine vegetation community in the distance within the northeastern section of the Brunswick Industrial Site.



Photo 17: Historic mining infrastructure in background is located within the developed northeastern section of the Brunswick Industrial Site with montane hardwood vegetation community in the foreground.



Photo 18: Edge of mapped annual grassland and montane hardwood vegetation communities and mapped ponderosa pine vegetation community in the distance within the northeastern section of the Brunswick Industrial Site.



Photo 19: South Fork Wolf Creek in the northeastern corner of the Brunswick Industrial Site. Suitable habitat present for the foothill yellow-legged frog in this area of the site.



Photo 20: South Fork Wolf Creek below the culvert outfall within the Brunswick Industrial Site. Marginal suitable habitat present for the foothill yellow-legged frog in this area.

Photos of East Bennett Road ROW



Photo 21: Mapped Roadside Wetland along East Bennett Road. Wetland area contained standing water and dominated by hydrophytic vegetation.



Photo 22. East Bennett Road ROW. No drainages or wetlands along this section of Project Area. Entire area is developed and within a ponderosa pine vegetation community.



Photo 23. Manmade drainage along north side of East Bennett Rd. ROW. Drainage located outside of ROW and drains to the south side of East Bennett Rd. ROW.

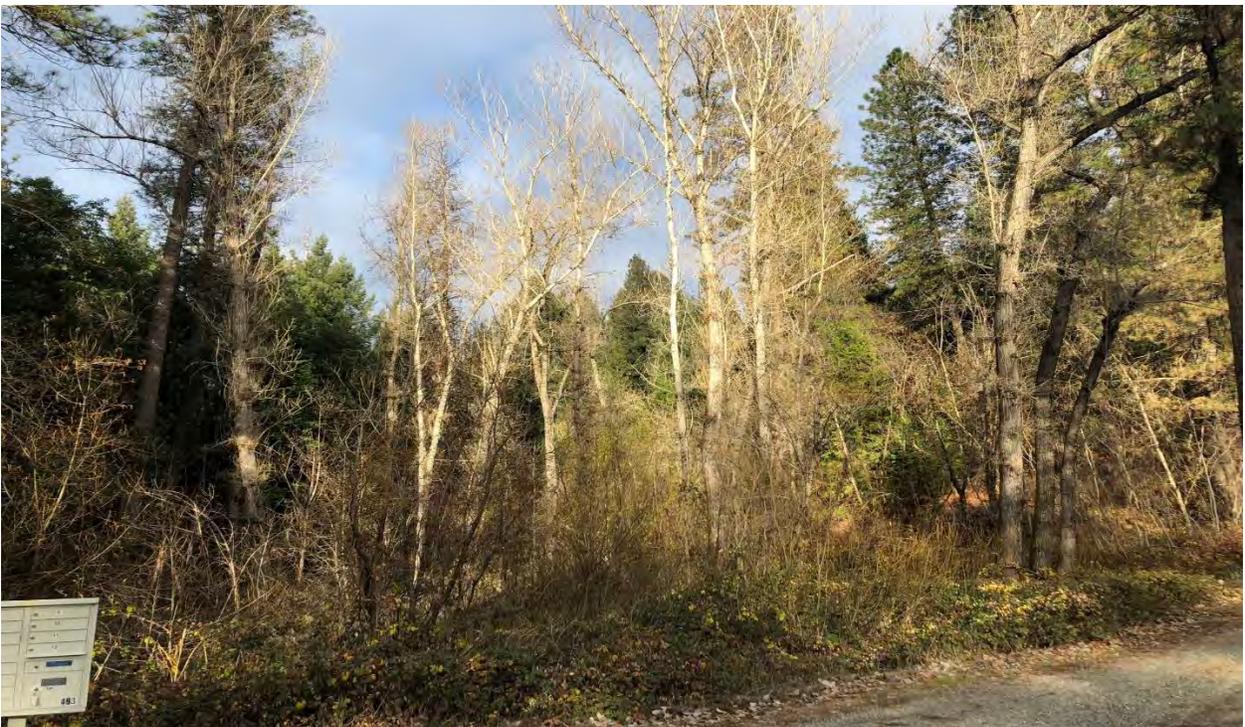


Photo 24. Riparian wet area adjacent to the East Bennett Rd. ROW on north side of road. ROW is developed within this area of the site.



Photo 25. Northern side of E. Bennett Rd. ROW



Photo 26. South side culvert/drainage along East Bennett Road ROW. Located towards lower end of E. Bennett Road ROW and within the developed part of the ROW.

Appendix F

CNPS Ranked Plants and Special-Status Plant and Wildlife Species Descriptions

Common and Scientific Name	Legal Status ¹	Habitat Association	Identification Period	Potential for Species/Habitat Presence
	Federal/State/CNPS			
Stebbins' morning-glory <i>Calystegia stebbinsii</i>	--/--/1.B2	Gabbroic or serpentinite soils. Openings in chaparral, cismontane woodland, lower montane coniferous forest, from 980-4,330 feet.	Apr- Jul	Low Known 4 miles to east on gabbroic chaparral on Oceola Ridge. Gabbroic soils not present in study area. Was not observed during targeted 2019 field surveys.
Sierra arching sedge <i>Carex cyrtostachya</i>	--/--/1B.2	Lower montane mesic coniferous forest, meadows and seeps, marshes and swamps, Riparian forests (margin), from 2,000-4,460 feet.	May -Aug	Low. Potential for occurrence in mesic forests. Within the known distributional and elevational range for this species, though nearest known occurrence 16 miles to the north. This species was recently described so the full extent of its range and distribution are unlikely yet known. Marginal habitat present in study area, and it was not observed during 2019 field surveys.
Chaparral sedge <i>Carex xerophila</i>	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forests on serpentinite and gabbroic substrates, from 1,400 – 2,525 feet.	Mar- Jun	Low. Known 4 miles away on Oceola Ridge in gabbroic chaparral. Gabbroic soils not present in study area. Was not observed during 2019 field surveys.
Red Hills soaproot <i>Chlorogalum grandiflorum</i>	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forests on serpentinite and gabbroic substrates, from 800 – 5,545 feet.	May-Jun	Low. Known over 10 miles south in Bunch Canyon south of Colfax, with no known occurrences to north. Gabbroic soils not present in study area. Was not observed during 2019 field surveys.
Pine Hill flannelbush <i>Fremontodendron decumbens</i>	FE/CR/1B.2	Chaparral, cismontane woodland on serpentinite and gabbroic substrates, from 1,390 – 2,495 feet.	Apr- July	Low. Known from two miles to the north. Gabbroic soils not present in study area. Was not observed during targeted 2019 field surveys.
Butte County fritillary <i>Fritillaria eastwoodiae</i>	--/--/3.2	Openings in chaparral, cismontane woodland, and lower montane coniferous forest, sometimes serpentinite, from 160-4,920 feet.	Mar-Jun	Low. Potential for occurrence in open areas in the study area. There is a 1979 record for this species on the south side of the South Yuba River canyon approximately 7 miles north of the study area, and other occurrences on the Washington Ridge. Surveys were not conducted during the appropriate phenological period for this species (April-May).

Common and Scientific Name	Legal Status ¹	Habitat Association	Identification Period	Potential for Species/Habitat Presence
	Federal/State/CNPS			
Finger rush <i>Juncus digitatus</i>	--/--/1B.1	Seasonal wet areas, cismontane woodland openings, openings in lower montane coniferous forest, xeric vernal pools, from 2,165-2,590 feet.	Apr-Jun	Low. Potential for the occurrence in gravelly, seasonally moist openings. Known less than one mile to the north near the intersection of Idaho Maryland and Brunswick. Was not observed during 2019 field surveys.
Dubious pea <i>Lathyrus sulphureus</i> var. <i>argillaceus</i>	--/--/3	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest, from 490-3,050 feet.	Apr-May	Low. Potential to occur in forested areas. Known within 3 miles of study areas from a 1926 collection. Also known to SW 5 miles away near Wolf Mountain. Plant list from 2006 surveys have a <i>Lathyrus sulfureus</i> with no variety designation, but not observed during 2019 surveys.
Cantelow's lewisia <i>Lewisia cantelovii</i>	--/--/1B.2	Moist, granitic areas in broadleaf upland forest, chaparral, cismontane woodland, lower montane coniferous forest mesic, sometimes serpentinite seeps, from 1,080-4,495 feet.	May-Oct	Low. Potential for occurrence in any rocky outcrops with seeps on the parcel. There are records for this species in the Middle Yuba and South Yuba river canyons within 7 miles of the study area. The preferred habitat for this species in the study area has been disturbed and is of reduced quality. Was not observed during 2019 field surveys.
Cedar Crest popcornflower <i>Plagiobothrys glyptocarpus</i> var. <i>modestus</i>	--/--/3	Cismontane woodland, valley and foothill grasslands (mesic), from 2,850-2,855 feet.	Apr-Jun	Moderate. Known from historic collection potentially from nearby Cedar Ridge. Also known from historic collections in Nevada City. Suitable habitat for this species is present. Was not observed during 2019 field surveys.
Sierra blue grass <i>Poa sierrae</i>	--/--/1B.3	Openings in lower montane coniferous forest, 1,195-4,920 feet.	Apr-Jul	Moderate. There is only marginal suitable habitat for this species in the study area, primarily in the Sierran mixed conifer, ponderosa pine forest, and in the forested areas along South Fork of Wolf Creek. Known 7 miles to the east of the study area at Steephollow Creek from a collection from 1964. Was not observed during 2019 field surveys.

Common and Scientific Name	Legal Status ¹	Habitat Association	Identification Period	Potential for Species/Habitat Presence
	Federal/State/CNPS			
Brownish beaked-rush <i>Rhynchospora capitellata</i>	--/--/2B.2	Wet areas (marshes, swamps, meadows, and seeps) in montane coniferous forest, from 145-6,560 feet.	Jul-Aug	Moderate. Suitable habitat for this species in the perennial marsh wetlands. It is known 3 miles to the west near the Nevada County Fairgrounds from a report in 1973. Was not observed during 2019 field surveys.
Scadden Flat checkerbloom <i>Sidalcea stipularis</i>	--/CE/1B.1	Marshes and swamps (montane freshwater), from 2,295-2,395 feet.	Jul-Aug	Moderate. Suitable habitat for this species in the perennial marsh wetlands. It is known 3 miles to the west near the Nevada County Fairgrounds from a report in 1973. Was not observed during 2019 field surveys.

¹Status explanations:

FE = Federally Endangered
CR = State Rare
CE = State Endangered
-- = no listing.

California Native Plant Society Rare Plant Rank (formerly known as CNPS lists)

1B = Rank 1B species: rare, threatened, or endangered in California and elsewhere.
2B = Rank 2B species: rare, threatened, or endangered in California but more common elsewhere.
3 = Rank 3 species are taxonomically problematic and lack the necessary information to assign them to one of the other ranks.
4 = Rank 4 plants are of limited distribution or infrequent throughout a broader area in California; should be monitored regularly.

Source: CNPS 2019; CNDDDB 2019; USFWS 2019, and Calflora 2019.

Common and Scientific Name	Legal Status ¹	Habitat Requirements	Potential for Species/Habitat Presence
	Federal/State		
Amphibians			
California red-legged frog <i>Rana draytonii</i>	FT/SSC	Found in permanent and semi-permanent aquatic habitats, such as creeks and ponds, with emergent and submergent vegetation. May aestivate in rodent burrows or cracks during dry periods. Along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County.	Very Low ; however, the perennial aquatic resources such as the freshwater emergent marsh habitats and a large manmade pond within the Brunswick Industrial Site contain marginal suitable habitat for the species.
Foothill yellow-legged frog <i>Rana boylei</i>	SCT/SCC	Perennial rocky (pebble or cobble) streams with cool, clear water in a variety of habitats from valley and foothill oak woodland, riparian forest, ponderosa pine, mixed conifer, coastal scrub, and mixed chaparral at elevations ranging from 0 to 6,370 feet. Occurs in the Klamath, Cascade, north Coast, south Coast, and Transverse Ranges; through the Sierra Nevada foothills up to approximately 6,000 feet south to Kern County	Very Low ; however, the South Fork Wolf Creek within the western section of the Brunswick Industrial Site contains marginal suitable habitat for the species.
Reptiles			
Western pond turtle <i>Emys marmorata</i>	--/SSC	Thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation, below 6,000 feet in elevation. Populations extend throughout the coast and central valley of California.	High potential for occurrence in areas near water, including South Fork Wolf Creek and perennial aquatic resources such as the freshwater emergent marsh habitats and manmade pond within the Brunswick Industrial Site.
Coast horned lizard <i>Phrynosoma blainvillii</i>	--/SSC	Associated with open patches of sandy soils in washes, chaparral, scrub, and grasslands.	Moderate potential for occurrence in areas with appropriate habitat within the Brunswick Industrial Site, including open disturbed areas.
Mammals			
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	--/SSC	Associated with lower montane coniferous and mixed conifer forest habitats where abandoned buildings and structures occur for roosting.	Low potential for occurrence in areas containing abandoned structures, including the existing mill structure in the Brunswick Industrial Site.

Common and Scientific Name	Legal Status ¹	Habitat Requirements	Potential for Species/Habitat Presence
	Federal/State		
Birds			
California black rail <i>Laterallus jamaicensis coturiculus</i>	--/CT	California black rail inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. The species requires water depths of approximately 1 inch that does not fluctuate during the year and dense vegetation for nesting habitat.	Very Low ; however, the perennial aquatic resources such as the freshwater emergent marsh habitats within the Brunswick Industrial Site contain marginal suitable habitat for the species.
Cooper's hawk <i>Accipiter cooperii</i>	MBTA/CDFW Watch List	Cooper's hawks are forest and woodland birds. These hawks are a regular sight in parks, quiet neighborhoods, over fields, at backyard feeders, and even along busy streets if there are trees present.	Moderate potential to occur; within the woodland habitats in the Brunswick Industrial Site. Project area contains suitable nesting habitat for the species.
Invertebrates			
Western bumble bee <i>Bombus occidentalis</i>	--/SCT	Western bumble bee was documented approximately 3 miles northeast of Nevada City (4+ miles from the Centennial Site) in 1968. It is known from a single collection on May 20 th of that year. This species is of conservation concern and is listed as S1, Critically Imperiled, by NatureServe and is listed on the CNDDDB.	Unlikely to occur in the Brunswick Industrial Site or surrounding region.

¹Status explanations:

-- = no listing.

Federal

BCC = federal Bird of Conservation Concern

FPT = federal proposed threatened under the federal Endangered Species

FT = listed as threatened under the federal Endangered Species Act.

State

FP = state fully protected

SCT = state candidate for listing as threatened under the California Endangered Species

SE = listed as endangered under the California Endangered Species Act.

SSC = state species of special concern

ST = listed as threatened under the California Endangered Species Act.

Source: CNDDDB 2019 and USFWS 2019

Appendix G

CNDDDB 5-Mile Buffer Figure

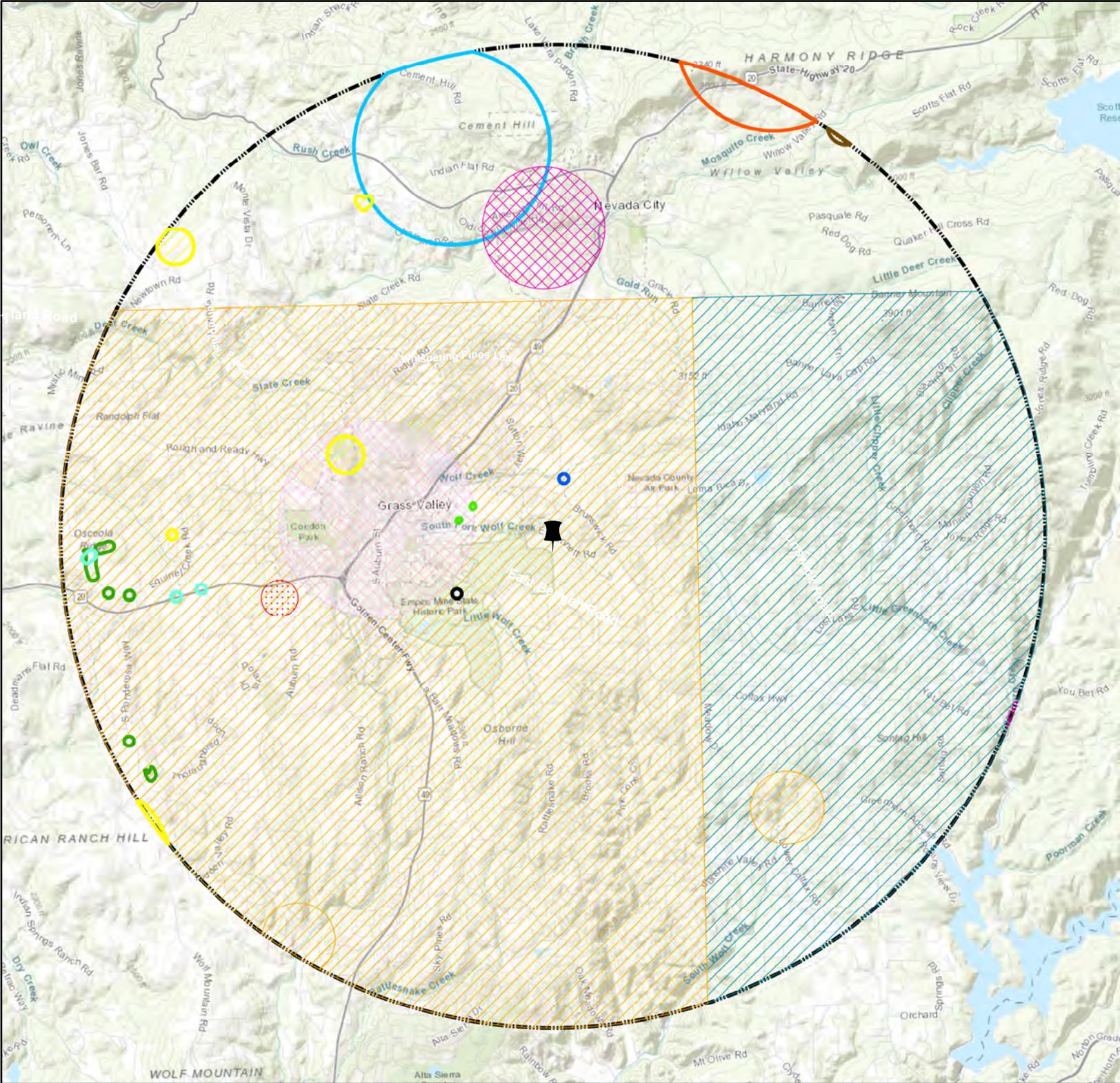


Figure. Known Occurrences of Special Status Species within 5 Miles of the Brunswick Area

Legend

- FiveMileProjectBuffer
- Project Area

Common Name, Scientific Name, FESA, CESA, CNPS

	Brandegge's clarkia, <i>Clarkia biloba</i> ssp. <i>brandegeae</i> , none, none, 4.2		Townsend's big-eared bat, <i>Corynorhinus townsendii</i> , none, none
	California black rail, <i>Laterallus jamaicensis coturniculus</i> , none, Threatened		brownish beaked-rush, <i>Rynchospora capitellata</i> , none, none, 2B.2
	Cooper's hawk, <i>Accipiter cooperii</i> , none, none		chaparral sedge, <i>Carex xerophila</i> , none, none, 1B.2
	Pine Hill flannelbush, <i>Fremontodendron decumbens</i> , Endangered, Rare, 1B.2		coast horned lizard, <i>Phrynosoma blainvillii</i> , none, none
	Scadden Flat checkerbloom, <i>Sidalcea stipularis</i> , none, Endangered, 1B.1		dubious pea, <i>Lathyrus sulphureus</i> var. <i>argillaceus</i> , none, none, 3
	Stebbins' morning-glory, <i>Calystegia stebbinsii</i> , Endangered, Endangered, 1B.1		finger rush, <i>Juncus digitatus</i> , none, none, 1B1
			foothill yellow-legged frog, <i>Rana boylei</i> , none, Candidate Threatened
			western bumble bee, <i>Bombus occidentalis</i> , none, none

1 in = 1 miles

Appendix H

Nevada County Erosion Control Plans and Caltrans Native Plant Seed Mixes

CALTRANS Native Plant Erosion Control Methods

Key Considerations in Determining an Application Rate:

Primary consideration - the desired number of mature plants/ft²:

- A commonly used application range is 80 – 100 seeds/ft. Adjust this number as required by the mature plant size.
- While 80 monkey flower per square foot may be desirable, 80 giant brush lupine per square foot will lead to vegetation establishment problems.
- Seed species size & weight:
 - Remember, seed size and weight varies greatly by species.
 - 1 pound of Desert Bluebells = 2,000 seeds
 - 1 pound of Monkey flower = 54,000,000 seeds
- Ease of germination for that species
- Seeding method:
 - Drill seeding requires half the application rate as hydroseeding or hand seeding.

Calculation Example:

We want a seed density of 100 seeds/ft² for our site. The seeds will be hydroseeded or hand seeded (same recommended application rate, 80 – 100 seeds/ft²). Calculate the application rate (lb PLS/ac) for the seed mix listed in Table 1.

Given:

Total seed density = 100 seeds/ft²

1 acre = 43,560 ft²

Table 1 - Seed Mix Species and Seeding Density

Scientific Name	Desired seeding density (seeds/ft ²)	Average pure seed weight (seeds/lb PLS)
Lotus purshianus	11	108,500
Nassella cernua	11	215,200
Bromus carinatus	23	72,600
Festuca rubra molate	22	391,800
Hordeum californicum	22	135,700
Leymus triticoides	11	153,000
Total	100	

Solution:

a. Equation

$$\text{lb PLS/ac} = \frac{\text{Seed density (seeds/ft}^2\text{)} \times 43,560 \text{ ft}^2\text{/ac}}{\text{Avg pure seed weight (seeds/lb PLS)}}$$

b. Calculations

Lotus purshianus: 11 seeds/ft² x 43,560 ft²/ac = 4.4 lb PLS/ac
108,500 seeds/lb PLS

Nassella cernua: 11 seeds/ft² x 43,560 ft²/ac = 2.2 lb PLS/ac
215,200 seeds/lb PLS

Bromus carinatus: 23 seeds/ft² x 43,560 ft²/ac = 13.8 lb PLS/ac
72,600 seeds/lb PLS

Repeat for the remaining species (see Table 2 for results).

Table 2 - Seed Application Rates

Scientific name	Application rate (lb PLS/ac)
Lotus purshianus	4.4
Nassella cernua	2.2
Bromus carinatus	13.8
Festuca rubra molate	2.4
Hordeum californicum	7.1
Leymus triticoides	3.1
Total	33.0

Total seed application rate on the Erosion Control Legend should be 33.0 lb PLS/ac.



EROSION AND SEDIMENT CONTROL PLANS

What is an Erosion /Sediment Control Plan?

- An erosion/sediment control plan includes specific construction techniques identified on the site plan or grading plan, to ensure that no sediment leaves the construction site.

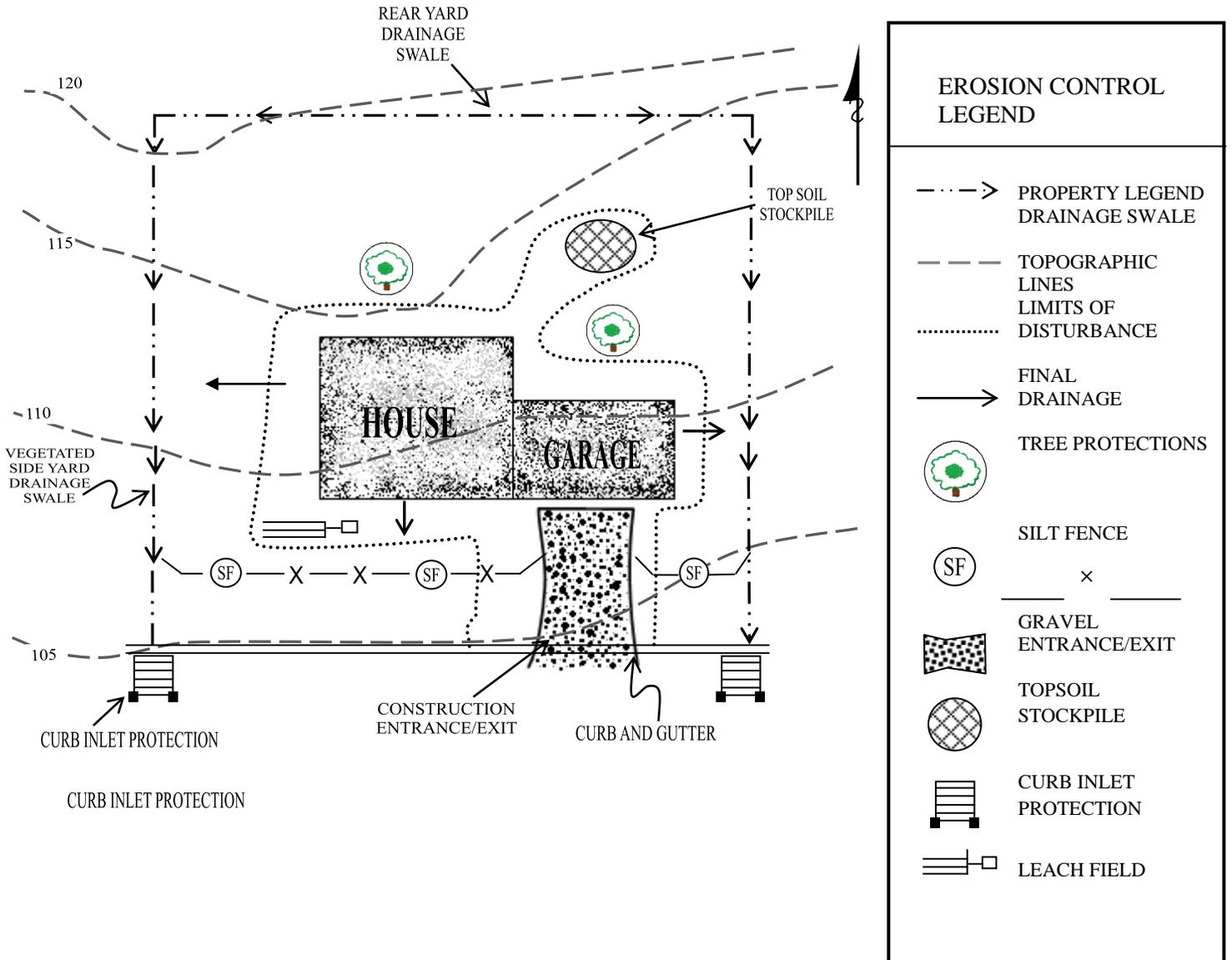
Information on Erosion/Sediment Control Plans:

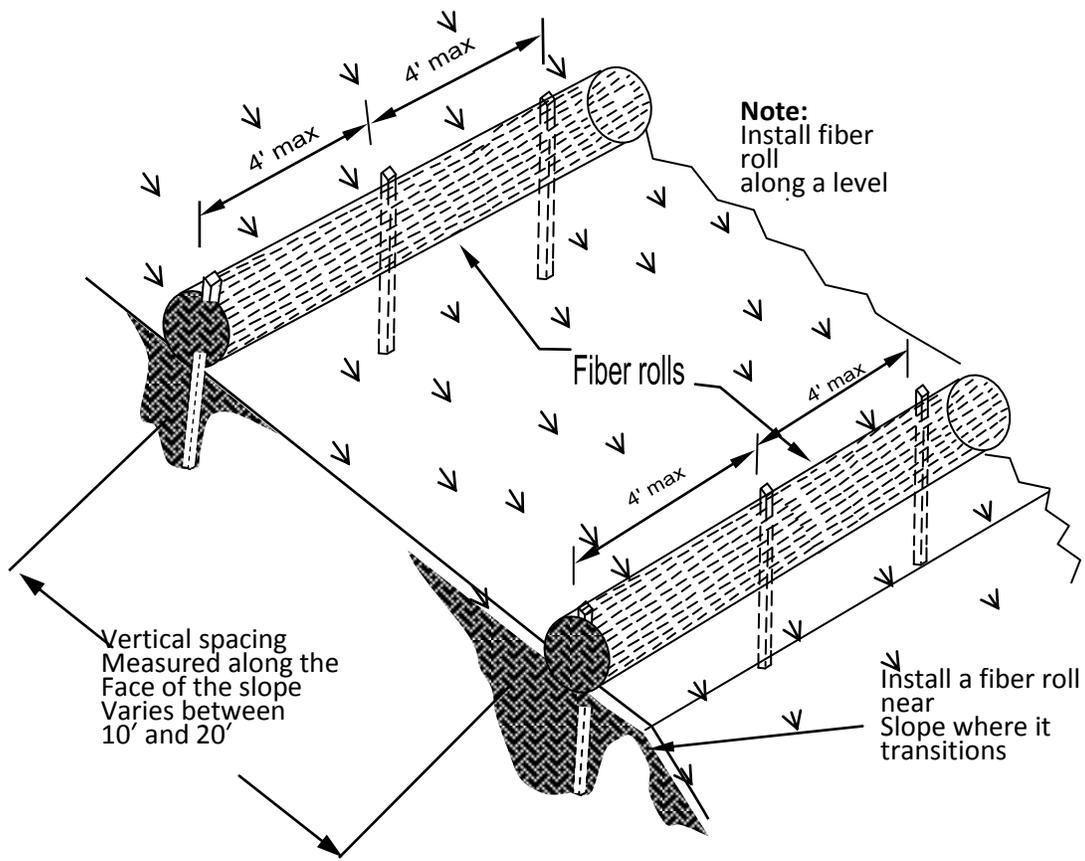
- Location of proposed building site
- Property lines
- Existing slope direction and grade identified.
- Proposed contour lines (if grading permit required)
- Location and any needed details of erosion/sediment control measures
- Construction entrance/exit
- Drainage plan with details of drainage control devices
- Limits of land disturbance
- Septic and leach field
- Re-vegetation plan to include all disturbed soils shall be seeded and covered with mulch

NOTE:

- Straw bales are not recommended for steep sloping site
- Silt fencing is recommended for bottom of steep sites
- Straw rolls/wattles are recommended for gently sloping site with lots of grading
- Erosion control blankets are recommended for steep slopes with gradients over 3"1.
- Land disturbance of one acre (43,560 SF) or more requires filing of a Notice of Intent (NOI) with the State.

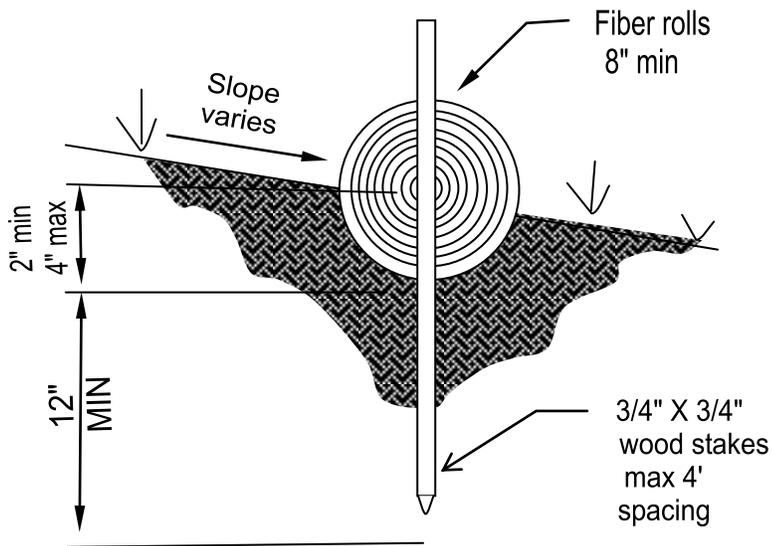
SAMPLE EROSION /SEDIMENT CONTROL PLAN FOR A SINGLE FAMILY RESIDENCE UNDER CONSTRUCTION





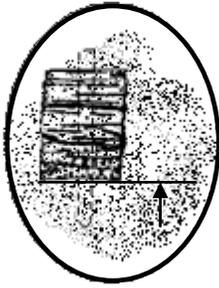
TYPICAL FIBERT ROLL INSTALLATION

N.T.S.

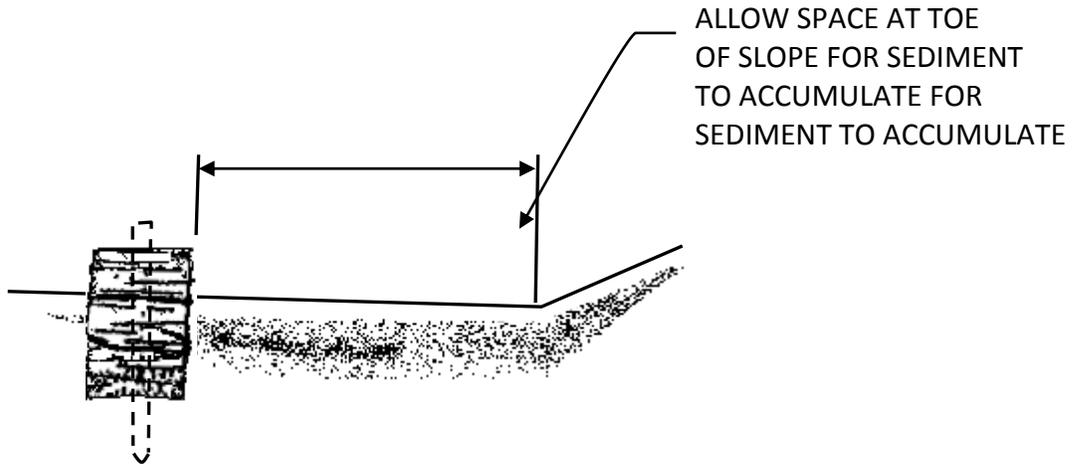
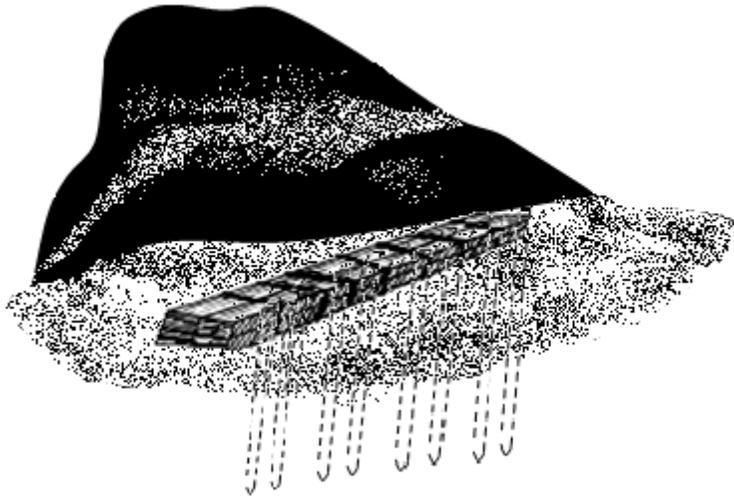


ENTRENCHMENT DETAIL

N.T.S.



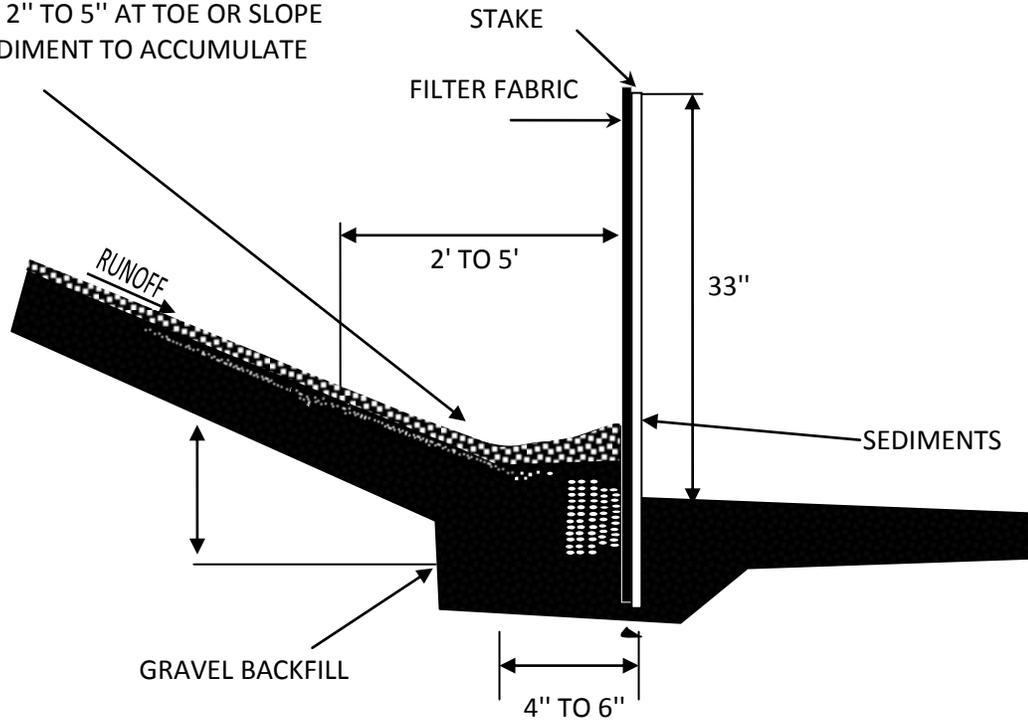
SOIL NOTE:
EMBED
STRAW BALE
4" MIN. INTO



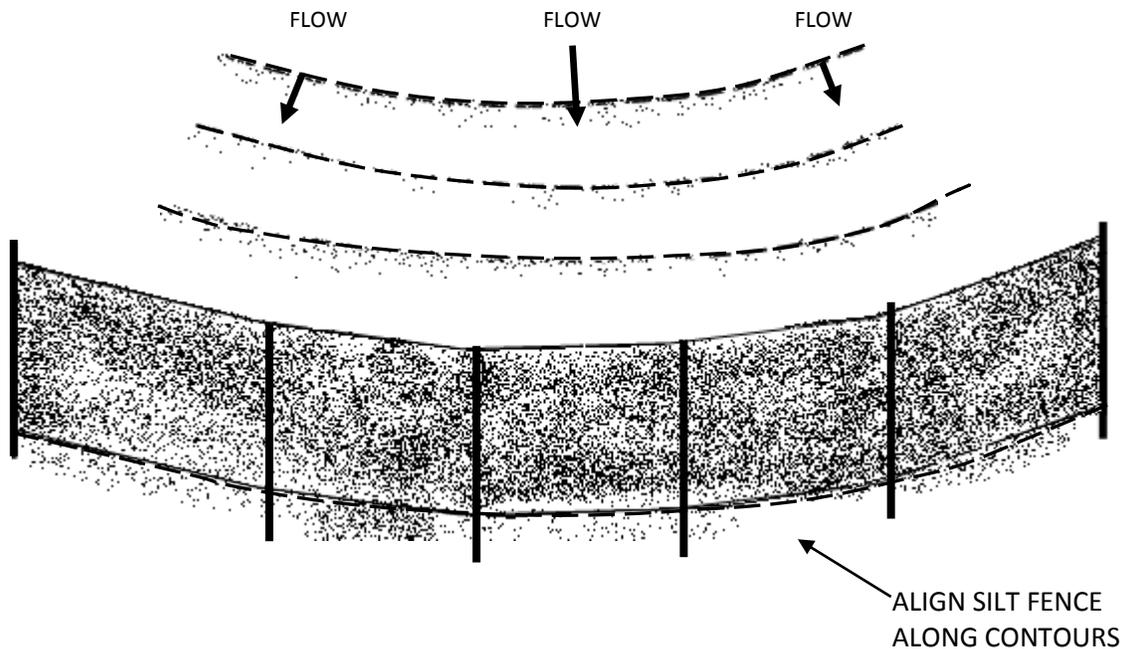
1

STRAW BALE DIKE

ALLOW 2" TO 5" AT TOE OR SLOPE
FOR SEDIMENT TO ACCUMULATE



RECOMMENDED INSTALLATION OF SILT FENCE



NOTE: Erosion and sediment control measures must remain functional and be maintained throughout the winter season. Failure to adequately maintain erosion and sediment control measures constitute a violation of the issued building or other permit. Maintain positive drainage away from all structures. Seed and cover all disturbed soil with mulch.

**Seeding Mixtures for Temporary Cover
Foothill Areas Mix**

<u>Mixture</u>	<u>Lbs/1000 Sq. Ft.</u>	<u>Lbs/Acre (Broadcast)</u>
1) or	Annual Rye	1 24
2)	Briggs Barley	4 180

Mountainous Conifer Area

<u>Mixture</u>	<u>Lbs/1000 Sq. Ft.</u>	<u>Lbs/Acre (Broadcast)</u>
1) or	Cereal Rye	2 90
2) Briggs Barley	4	180

**Seeding Mixtures for Permanent Cover
Foothill Areas**

<u>Mixture</u>	<u>Lbs/1000 Sq. Ft.</u>	<u>Lbs/Acre (Broadcast)</u>
1) Zorro annual fescure Rose clover * Shallow soil w/south or west exposure or	0.2 0.2	6 9
2) Blando brome Rose clover* (deeper soils or north exposure)	0.3 0.2	12 9
3) Blando brome Lana woollypod vetch* (Deeper soils- Forage for grazing)	0.3 0.4	12 45

Mountainous Conifer Zone

<u>Mixture</u>	<u>Lbs/1000 Sq. Ft.</u>	<u>Lbs/Acre (Broadcast)</u>
1) Luna pubescent wheatgrass	0.6	24
Palestine orchard grass	0.2	8
“Sherman” big bluegrass	0.2	6
“Durar” hard fescue	0.2	6

Legume seed must be inoculated with proper nitrogen fixing bacteria.

The application of mulch is necessary to reduce the impact of rainfall, help hold soil in place, and provide a moist soil surface for seed germination. The mulch should be applied in such a manner that 80-100% of the surface is covered to a depth of 1-2 inches. The most common mulch used is clean grain straw. It should be applied at the rate of 2 tons per acre. This rate is equivalent to:

<u>Mulch</u>	<u>Bales/1000 Sq. Ft.</u>	<u>Bales/Acre</u>
Straw (3 wire-80 Pound Bales)	1	50