Centennial Industrial Site
Idaho-Maryland Mine Project

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: Centennial Industrial Site
Idaho-Maryland Mine Project

Project Site Location: SECTION 26, T.16N, R.8E

CENTENNIAL INDUSTRIAL SITE		
Assessor Parcel Number	**Site Address**	**Lot Size (Acres)**
009-550-032	N/A	20,908 SF (0.48 AC)
009-550-037	10344 Centennial Drive	4.47 AC
009-550-038	10350 Centennial Drive	40.1 AC
009-550-039	10344 Centennial Drive	42,668 SF (0.98 AC)
009-550-040	N/A	5,662 SF (0.13 AC)
009-560-036	10350 Centennial Drive	10.25 AC
Centennial Industrial Site - Land Total:		**56.41 AC**

Property Owner / Applicant: Rise Grass Valley, Inc.
PO Box 271
Grass Valley, CA 95945

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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 Idaho-Maryland Mine Project ("IMM Project") at the Centennial Industrial Site located in Nevada County, California (see Project Overview Figure in Appendix A). The Centennial Industrial Site ("Centennial Site") is 56.41 acres. This Management Plan references and incorporates the findings of three stand-alone reports completed for the Centennial Site:

- Centennial Industrial Site Aquatic Resources Delineation of Waters of the United States and State of California (Greg Matuzak Environmental Consulting LLC, 2020).
- Centennial Industrial Site Biological Resources Assessment (Greg Matuzak Environmental Consulting LLC, 2021a).
- Technical Memorandum for Centennial Industrial Site: Idaho-Maryland Mine Project - Biological Resources Impact Assessment (Greg Matuzak Environmental Consulting LLC, 2021b).

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 Centennial Site IMM Project 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 Centennial Site for the IMM Project area, as well as potential disturbance within the non-disturbance buffers of the aquatic features.

2.3 Project Statement

This Management Plan was developed pursuant to Sec. L-II 4.3.17 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 permanent disturbance impacts to aquatic resources subject to Nevada County regulations within the Centennial Site for the IMM Project.

A maximum of ~0.033 acres of permanent impacts to ephemeral streams (E-3 and E-4) and subject to 50-foot non-disturbance buffers will occur from the implementation of the proposed IMM Project at the Centennial Site.

The proposed IMM Project will have no permanent or temporary impact on the perennial Wolf Creek located within the Centennial Site as currently designed; however, temporary disturbance or encroachment may occur within the 100-foot non-disturbance buffer to Wolf Creek due to construction activities though such disturbance is not currently being proposed.

Direct and permanent impacts to two ephemeral streams (E-3 and E-4) and their 50-foot non-disturbance buffer areas, as well as potential temporary impacts to the 100-foot non-disturbance buffer of the perennial stream (Wolf Creek), is the focus of this Management Plan. The disturbance impacts are based on the Project Description outlined in Section 5 of this Management Plan, the Site Plan (Figure 1), and Aquatic Resources Delineation (Figure 2).

TABLE 1.0 PERMANENT DISTURBANCE IMPACTS TO AQUATIC RESOURCES

Maximum Direct & Permanent Disturbance Impacts			
Size	**Impact Type**	**Mapped Feature ID**	**Non-Disturbance Buffer**
~0.017 acres	Permanent fill impact to ephemeral stream	E-3	50 ft
~0.018 acres	Permanent fill impact to ephemeral stream	E-4	50 ft

3 SUMMARY OF MANAGEMENT PLAN CONCLUSIONS AND RECOMMENDATIONS

Permanent and temporary impacts to stream and wetland resources mapped within the IMM Project area at the Centennial Site 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 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; and
- Implement Best Management Practices during and following construction.

Additional mitigation measures are incorporated by reference from the Biological Resources Impact Assessment Technical Memorandum developed for the Centennial Site of the IMM Project specifically for special-status wildlife and plant species that have the potential to occur within the proposed disturbance areas (Matuzak, 2021b).

4 PROPERTY DESCRIPTION

4.1 Project Setting

The Management Plan includes a full coverage assessment of the 56.41-acre Centennial Site, see Appendix A for a Centennial Site Overview Figure and Figure 1 for the Centennial Site Plan. The recorded owner of the surface land which comprises the Centennial Site is Rise Grass Valley.

The Centennial Site is part of the original land holdings of the historic Idaho-Maryland Mine, which operated between approximately 1851 and 1956. The Project Area was the location of the mine tailings storage area for the larger mine site. The site discharged water into the main stem of Wolf Creek via a decant tower, which is still in place in the northwest portion of the site. During the 1930s, the Idaho-Maryland Mine operated a mineral processing plant, located adjacent and to the east of the Project Area. The results of historic mine tailing deposition in the Project Area can still be seen in the soils within the site, some of which have the appearance of many layers of deposited material of varying color.

The Centennial Site is bordered by Idaho Maryland Road on the northern boundary, Centennial Drive along the northeast boundary, DeMartini RV Sales along the western boundary, commercial development along the eastern boundary, and privately-owned industrial land along the southern boundary. Overall, the Centennial Site is surrounded by private commercial and industrial land use and zoning.

The Centennial Site includes the main stem of Wolf Creek, a perennial stream. The main stem of Wolf Creek generally runs parallel to and immediately south of Idaho Maryland Road along the northern boundary of the Centennial Site. A Project Area Overview Figure is included in Appendix A.

4.2 Centennial Industrial Site Characterization

The Centennial 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 Centennial Site. Within the Centennial Site, the dumping of soils, landscape materials, and other miscellaneous items has also occurred for many decades and the current circumstances are now considered baseline or "normal" conditions given the decades that such disturbance has occurred within the Centennial Site. Areas not subject to this regular type of disturbance are dominated by native habitat and, therefore, are also the "normal" conditions within those areas of the Centennial Site. The presence of sandy loam soils within the northwestern section of the Centennial Site classifies that area as a potential *Problematic Wetland Situation area* as

defined by the Corps Supplement (Version 2.0), and careful attention was paid while evaluating onsite soils within this area.

4.3 Centennial Industrial Site Aquatic Resources

The Aquatic Resources Delineation Report for the Centennial Site (Matuzak, 2020) 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 Centennial Site are presented in Table 2.0 (see Figure 2 for an overview of the Aquatic Resources mapped within the Centennial Site).

TABLE 2.0 SUMMARY OF AQUATIC RESOURCES DELINEATION RESULTS

Wetland/Stream Type	No. of Features	Size (Acres)	Length (Linear Feet)
Wetlands			
Meadow Wetland	14	2.88	
Freshwater Emergent Marsh Wetland	2	0.31	
Riparian Wetland	1	1.18	
"Other Waters of the U.S"			
Perennial Stream	1	0.38	1,262
Intermittent Stream	2	0.17	1,616
Ephemeral Stream	5	0.05	1,090
Total	**25**	**4.97**	**3,968**

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

- A total of 4.97 acres of "waters of the U.S.," including wetlands, and "waters of the State of California" was identified and mapped within the Centennial Site. The 4.97 acres of wetland-waters includes 4.37 acres of mapped wetlands and 0.60 acres of mapped "other waters of the U.S.," including the main stem of Wolf Creek, as well as several intermittent and ephemeral streams.

The key findings of the Centennial Site Biological Resources Assessment (Matuzak, 2021a) and the Centennial Site Biological Resources Impact Assessment (Matuzak, 2021b) included the following:

- Perennial marsh wetlands within the eastern section of the Centennial Site contain potentially suitable habitat for several special-status aquatic wildlife species, including the California State ESA (CESA) listed threatened California black rail (*Laterallus jamaicensis coturiculus*) and the federally ESA listed California red-legged frog (*Rana aurora draytonii*). None of these species have been observed

within the Centennial Site and they are considered to have a very low potential to occur within the Centennial Site.

- The main stem of Wolf Creek along the northern boundary of the Centennial Site includes a perennial stream and riparian vegetation. The perennial stream contains marginal suitable habitat for the foothill yellow-legged frog (*Rana boylii*), a California State listed species under CESA. This species has never been observed within the Centennial Site and it is considered to have a very low potential to occur within the Centennial Site.
- Pine Hill flannelbush (*Fremontodendron decumbens*), a species listed on the federal Endangered Species Act (ESA), has been potentially identified and mapped within the southern portion of the Centennial Site. Sixty individual mature and flowering plants occupy an absolute area of 0.22 acres over approximately 4.5 acres of the Centennial Site.
- The Centennial Site contains two (2) unlisted plant species. Neither species is rare nor threatened. The two California Native Plant Society (CNPS) Lists the species at "List 4 Species", including the Humboldt lily (*Lilium humboldtii ssp. humboldtii*) and the Sierra brodiaea (*Brodiaea sierra*). A large population with thousands of individual Sierra brodiaea covering almost a quarter of the Centennial Site was mapped during 2019 field surveys and a single occurrence of the Humboldt lily consisting of 10 individuals in an area less than 110 sq. feet was also documented in the Centennial Site during 2019 field surveys. Impacts to these species (CNPS List 4) do not require mitigation under CEQA Guidelines Section 15380.
- Woodlands and grasslands within the Centennial Site contain suitable nesting habitat for some raptors and birds. None of these species have been observed within the Centennial Site and they are considered to have a moderate to high potential to occur and nest within the Centennial Site.

Descriptions of biological resources, as excerpted from the Centennial Site Biological Resources Assessment (Matuzak, 2021a), 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 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 Rise's 119-acre Brunswick Industrial Site. As a component of the mine project, Rise proposes to grade the Centennial Site to create usable industrial property for potential future development. Grading of the Centennial Site will utilize engineered fill material produced from mining operations at the Brunswick Industrial Site. Development of the Centennial Site into an industrial subdivision is not part of the proposed Centennial Site IMM Project and is not proposed by Rise.

The Centennial Site is located in Nevada County, CA and borders the City of Grass Valley city limits. Zones within the approximate 56-acre Centennial Site contain elevated metal concentrations from historical land use. Rise is working with the California Department of Toxic Substances Control (DTSC) to fully remediate the site by developing a plan that consolidates and caps the contaminated soils in a manner consistent with current federal and state regulations.

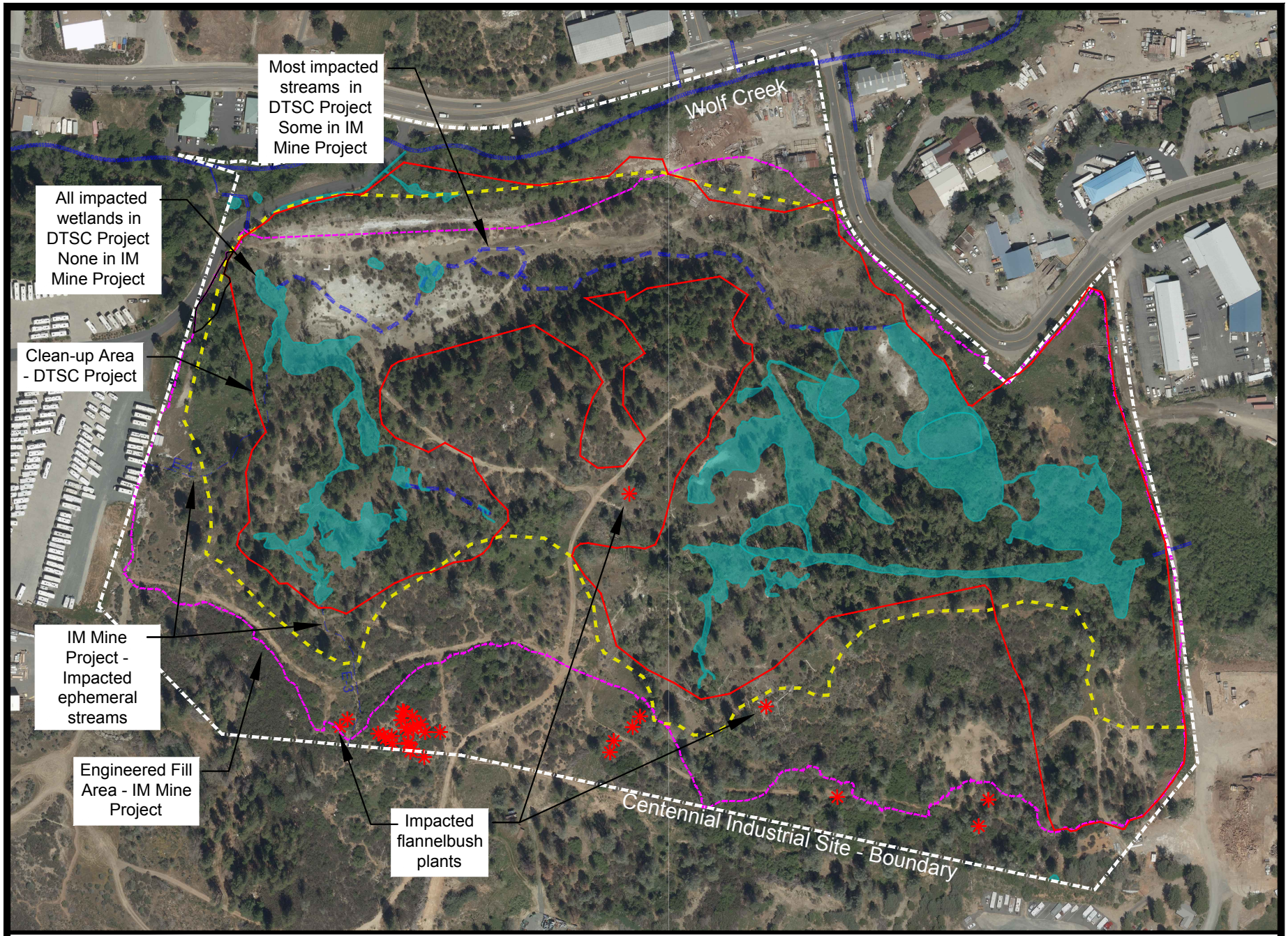
It is estimated that the cleanup program will cause a surface disturbance of 26.56 acres, inside the area of disturbance for the IMM Project, which will incorporate impacts to approximately 4.35 acres of mapped wetlands and 0.19 acres of mapped streams within the Centennial Industrial Site. Therefore, the impacts and associated mitigation of approximately 4.54 acres of wetlands and streams within the Centennial Industrial Site will be incorporated into the DTSC voluntary cleanup project and is outside the scope of the IMM Project.

After the environmental cleanup work at the Centennial Industrial Site is complete, Rise proposes to truck engineered fill from the Brunswick Industrial Site to the Centennial Industrial Site. The engineered fill, composed of barren rock and sand, will be placed, graded, and compacted. Concurrent with fill and grading activities, the fill slopes will be revegetated to control erosion and ensure slope stability. Grading activities associated with the IMM Project will cause a surface disturbance of approximately 43.71 acres including the previously disturbed area from the DTSC cleanup project and an additional 17.15 acres. The IMM Project would disturb approximately 0.033 acres to mapped streams.

The base of the engineered fill will extend approximately 43.71 acres across the site, although much of the area will have experienced surface disturbance by site remediation efforts. Disturbance and engineered fill placement will be avoided on the remaining 12.7 acres, which includes the main stem of Wolf Creek, the 100-foot non-disturbance buffer of Wolf Creek, and an undisturbed zone containing Pine Hill

flannelbush, a special-status plant species protected under the federal Endangered Species Act (see the attached appendices for the proposed IMM Project Site Plan).

IMM Project development at the Centennial Site will permanently impact approximately 6.0% of the Centennial Site streams: ~0.033 acres of "waters of the U.S." (streams) impacted of the total 0.6 acres of mapped perennial, intermittent, and ephemeral streams within the Centennial Site. Temporary disturbance or encroachment within the 100-foot non-disturbance buffer to Wolf Creek within the Centennial Site may occur due to construction activities.



LEGEND

- Centennial Industrial Site - Boundary
- Stream - Perennial
- Stream - Intermittent
- Stream - Ephemeral
- Wetland mapped on Centennial Site
- Boundary of historic tailings placement (approximate)
- Boundary of DTSC Clean-up Project (approximate)
- Boundary of IM Mine Project Engineered Fill placement
- Pine Hill Flannelbush

FIGURE
DISTURBANCE AREA
SHOWING 2017 AIR PHOTO

Scale 1 inch = 300 ft

6 ANALYSIS OF POTENTIAL IMPACTS

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

- Centennial Industrial Site Aquatic Resources Delineation of Waters of the United States and State of California (Greg Matuzak Environmental Consulting LLC, 2020).
- Centennial Industrial Site Biological Resources Assessment (Greg Matuzak Environmental Consulting LLC, 2021a).
- Technical Memorandum for Centennial Industrial Site: Idaho-Maryland Mine Project - Biological Resources Impact Assessment (Greg Matuzak Environmental Consulting LLC, 2021b).

6.1 Reconnaissance-level Biological Resources Field Surveys

Reconnaissance-level biological resources field surveys were conducted on foot for the entirety of the Centennial Site (56.41 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 and 17th and 18th, 2018. Follow up reconnaissance-level biological resources field surveys were conducted by Greg Matuzak for potential special-status wildlife species habitats 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 CNPS ranked plants and special-status plant and wildlife species identified in the desktop analysis and background research to occur within the Centennial Site. Further evaluation of the Centennial Site was conducted on July 1st, 10th, and 14th, 2019 by Ms. Boes who implemented protocol-level botanical surveys within the entirety of the Centennial Site during the time of year when the target CNPS ranked plants and special-status plant species with potential to occur within the Centennial Site are known to be in bloom and identification of each is most likely.

The presence of streams and wetlands within the Centennial Site that could be regulated by state and/or federal agencies were identified and mapped simultaneously and independently from the development of the Centennial Site Biological Resources Assessment (Greg Matuzak Environmental Consulting LLC, 2021a). See the stand-alone Aquatic Resources Delineation reporting for the Centennial Site (Greg Matuzak Environmental Consulting LLC, 2020, results located in Figure 2). The entirety of the Centennial Site was surveyed on foot and a list of plant 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 Centennial Site during the field surveys.

6.2 Environmental Setting

Vegetation communities within the Centennial Site are typical of the lower Sierra Nevada foothills. However, the terrain within the Centennial Site is not typical of the lower Sierra Nevada foothills that normally vary between flat ridges and valleys to gently and moderately sloping hillsides. The Centennial Site elevation ranges from approximately 2,500 to 2,600 feet above mean sea level (MSL) and much of the Centennial Site has been impacted due to historical mining and lumber mill practices, which has included the placement of large amounts of mine tailings within the Centennial Site and the removal of vegetation, among other disturbances. The Centennial Site is located along the main stem of Wolf Creek and the interior of the site is dominated by mixed hardwood-conifer forests, with areas of montane riparian woodland, mixed chaparral, mixed wetland types, and annual grassland.

The Centennial Site includes a perennial stream, the main stem of Wolf Creek. The main stem of Wolf Creek generally runs parallel to and immediately south of Idaho Maryland Road along the northern boundary of the Centennial Site. In addition, the Centennial Site contains several ephemeral and intermittent streams that connect with the main stem of Wolf Creek within the northwestern section of the Centennial Site. The drainages and streams located within the Centennial Site are described in the Aquatic Resources Delineation Report (Greg Matuzak Environmental Consulting LLC, 2020). Drainage patterns within the Centennial Site drain towards the main stem of Wolf Creek located along the northern boundary of the Centennial Site (see Figure 2).

6.3 Centennial Industrial Site Soil Types

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

6.4 Centennial Industrial Site Area Vegetation Communities

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

TABLE 3.0 VEGETATION COMMUNITIES AND ACREAGES

Vegetation Community	Acres within Centennial Site
Montane Hardwood-Conifer	5.29
Montane Hardwood	0.48
Wolf Creek and Montane Riparian	20.07
Mixed Chaparral	16.24
Annual Grassland	9.74
Freshwater Emergent Marsh Wetland	0.58
Wet Meadow	4.01
Total	**56.41**

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 Centennial Site and those species are represented within Table 5.0 below.

6.6 Centennial Industrial Site IMM Project Disturbance Impacts to Sensitive Biological Resources

It is estimated that the DTSC cleanup program will cause a surface disturbance of 26.56 acres, inside the area of disturbance for the IMM Project, which will incorporate impacts to approximately 4.35 acres of mapped wetlands and 0.19 acres of mapped streams within the Centennial Industrial Site. Therefore, the impacts and associated mitigation of approximately 4.54 acres of wetlands and streams within the Centennial Industrial Site will be incorporated into the DTSC voluntary cleanup project and is outside the scope of the IMM Project.

The focus of this Management Plan is direct and permanent impacts to a single intermittent stream, two ephemeral streams, and their associated 50-foot non-disturbance buffer areas, as well as potential temporary impacts to the 100-foot non-disturbance buffer of the perennial stream (Wolf Creek). Though no disturbance is proposed within Wolf Creek or within the 100-foot non-disturbance buffer to Wolf Creek, minimization and mitigation measures are included in this Management Plan that would cover any potential temporary disturbance within the Wolf Creek 100-foot non-disturbance buffer if they were to occur during construction.

An evaluation of impacts to the aquatic resources and their subsequent non-disturbance buffer zones covered under this Management Plan are provided below.

6.6.1 Project Impact Tables

Based on the Project Description for the IMM Project, Table 4.0 includes the estimated disturbance within the Centennial Site to mapped streams per the Aquatic Resources Delineation of Waters of the United States and State of California (Matuzak, 2020). The IMM Project will have no impact on mapped wetlands within the Centennial Site as impacts to mapped wetlands will occur as part of the DTSC remediation project, which is a separate project (refer to Section 5.1 for distinction between the IMM Project and DTSC Project). Therefore, Table 4.0 only includes proposed permanent disturbance to mapped streams within the IMM Project area based on the Centennial Site Plan (Figure 1) and the Aquatic Resources Delineation (Figure 2).

TABLE 4.0 AREA OF PERMANENT DISTURBANCE TO MAPPED STREAMS WITHIN THE IMM PROJECT AREA

No.	Stream Type	Wetland ID Number	Size (Acres)	Impact by IMM Project (Acres)
1	Perennial Stream	Wolf Creek – 1	0.377	-
2	Intermittent Stream	I – 1	0.161	Removed in DTSC cleanup
3	Intermittent Stream	I – 2	0.006	Removed in DTSC cleanup
4	Ephemeral Stream	E – 1	0.002	Removed in DTSC cleanup
5	Ephemeral Stream	E – 2	0.005	Removed in DTSC cleanup
6	Ephemeral Stream	E – 3	0.015	0.015
7	Ephemeral Stream	E – 4	0.018	0.018
8	Ephemeral Stream	E – 5	0.011	Removed in DTSC cleanup
8		**TOTAL**	**0.6**	**0.033**

Special-status species associated with the vegetation communities mapped within the Centennial Site are included in Table 5.0 below. Each of the vegetation communities in Table 5.0 contain the wetlands and streams and/or their non-disturbance buffers that are covered under this Management Plan.

TABLE 5.0 SPECIAL-STATUS SPECIES ASSOCIATED WITH VEGETATION COMMUNITIES

Vegetation Community	Associated Special-Status Species
Montane Hardwood-Conifer	Chaparral sedge (Rank 1B.2), Red Hills soaproot (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	Brandegee's clarkia (Rank 1B.2), Chaparral sedge (Rank 1B.2), Red Hills soaproot (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)
Wolf Creek and Montane Riparian	Sierra blue grass (Rank 1B.3)
	Foothill yellow-legged frog (CSC), Western pond turtle (CSC), nesting migratory birds (CDFW)
Mixed Chaparral	Pinehill flannelbush (FE/CR), Stebbins' morning glory (FE/CE), finger rush (Rank 1B.1), Chaparral sedge (Rank 1B.2), Cantelow's lewisia (Rank 1B.2), Red Hills soaproot (Rank 1B.2)
	Coast horned lizard (CSC) and nesting migratory birds (CDFW)
Annual Grassland	Brownish beaked-rush (Rank 2B.2)

Freshwater Emergent Marsh Wetland	Scadden Flat checkerbloom (FT/CT) and Brownish beaked-rush (Rank 2B.2)
	California red-legged frog (FT, CSC), Western pond turtle (CSC), and California black rail (CT)
Wet Meadow	Brownish beaked-rush (Rank 2B.2) and finger rush (Rank 1B.1)

6.6.2 Evaluation of Impacts

The proposed IMM Project within the Centennial Site will create surface impacts to sensitive aquatic resources as outlined in Section 5. The proposed IMM Project would have no impact on mapped wetlands within the Centennial Site as any fill or dredge of mapped wetlands within the Centennial Site will occur as part of the site remediation project through DTSC prior to the development of the IMM Project.

IMM Project development at the Centennial Site will permanently impact approximately 6.0% of the Centennial Site streams: ~0.033 acres of "waters of the U.S." (streams) of the total 0.6 acres of mapped perennial, intermittent, and ephemeral streams within the Centennial Site (see Table 4.0). Only mapped ephemeral streams would be impacted by the IMM Project.

Project development may cause temporary disturbance or encroachment within the 100-foot non-disturbance buffer to Wolf Creek though there is no proposed disturbance within Wolf Creek or its 100-foot non-disturbance buffer as part of the current design. No permanent impacts will occur to Wolf Creek (perennial creek) as the creek will be avoided completely.

The specific impacts to aquatic resources are detailed as follows:

IMPACT 1: Permanent fill to streams from construction and grading of engineered fill industrial pad.

Construction and grading from the engineered fill industrial pad on the Centennial Site will cause permanent impacts to two (2) mapped stream features (E-3 and E-4) and their associated 50-foot non-disturbance buffer zone. The 2 features consist of 2 ephemeral streams. It is estimated that a maximum of ~0.033 acres of streams will be permanently filled.

The impacted stream features convey site drainage in developed or disturbed areas or immediately adjacent to developed and disturbed areas of the Centennial Site. The ephemeral stream feature E-3 transmits site drainage from the southern area of the Centennial Site towards the north. Ephemeral stream feature E-4 drains from the hills along the western edge of Centennial Site, coming from runoff off of the DeMartini RV Sales site and flowing northeast until it connects with the large wet meadow wetland (WM-5).

IMPACT 2: Site construction activities may encroach on 100-ft non-disturbance buffer of Wolf Creek.

Pre-construction activities and grading near the toe of the engineered fill industrial pad on the Centennial Site may cause temporary impacts to the 100-ft non-disturbance buffer of Wolf Creek (perennial creek).

All construction activities will remain outside the Special Flood Hazard Area as per Federal Emergency Management Agency (FEMA) regulations which is covered under a separate Management Plan prepared by Nevada City Engineering, Inc. for the IMM Project.

No temporary or permanent impacts will occur to Wolf Creek from project development; however, this potential temporary impact is being included within this Management Plan in the case that temporary encroachment within the Wolf Creek 100-foot non-disturbance buffer be required as part of construction.

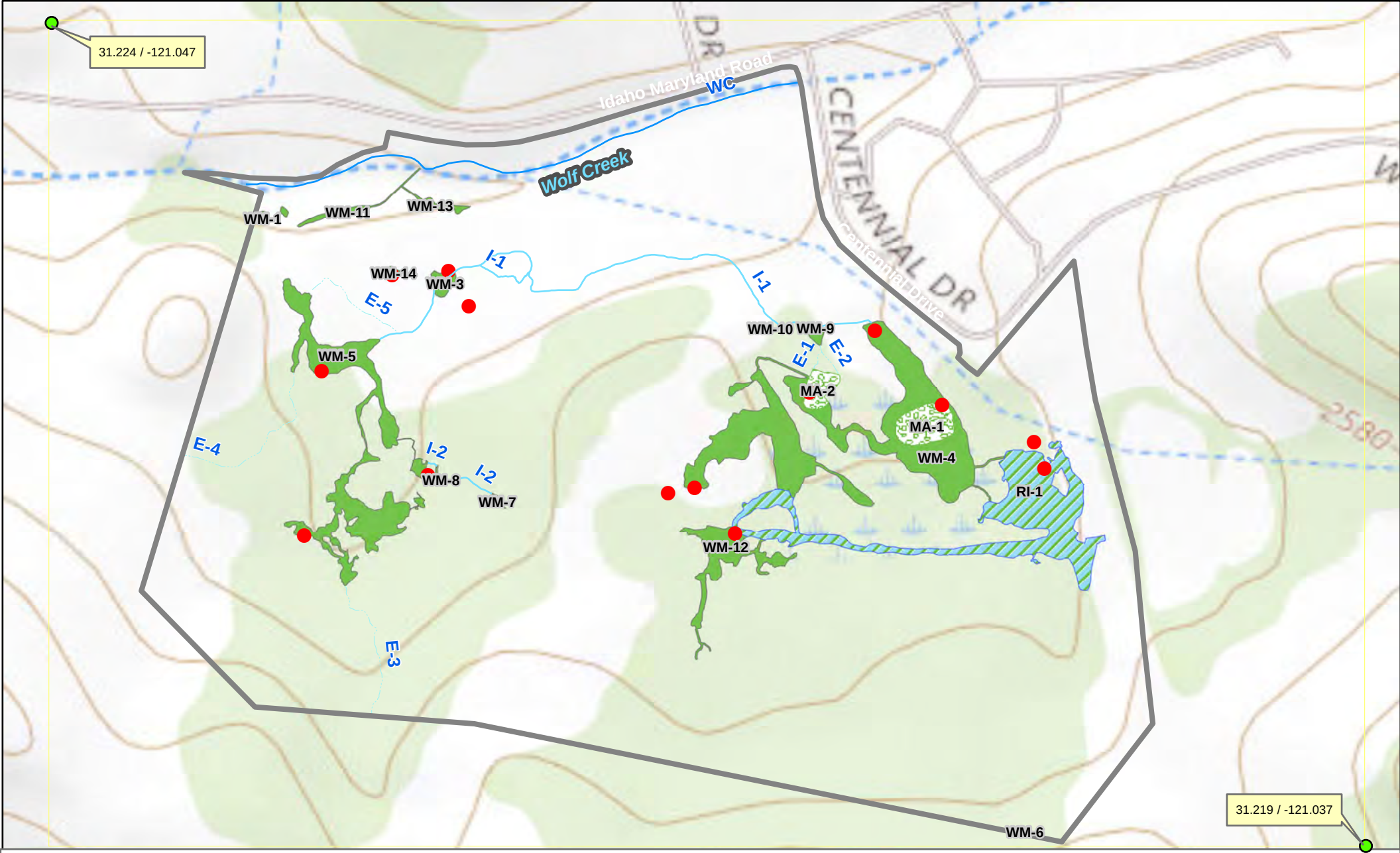


Figure. Centennial Industrial Site Study Area, Aquatic Resource Overview, USGS basemap.

Grass Valley, CA (APNs 009-550-037-000, 009-550-036-000, 009-550-032-000 & 009-550-038-000)
Grass Valley 7.5 minute USGS quadrangle
T16N, R8E Section 26

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

SCALE: 1 inch = 275 feet

0 55 110 220 330 440
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 August 31, 2020.

Legend

= Study Area, 56.4 ac.

Streams
=Ephemeral, 1,090 ft., 0.05 ac.
=Intermittant, 1,616 ft., 0.17 ac.
=Perennial,1,262 ft., 0.38 ac.

= Data point

Wetlands
= Marsh (MA), 0.31 acres
= Meadow (WM), 2.88 acres
= Riparian (RI), 1.18 acres

7 RECOMMENDED MITIGATIONS AND CONDITIONS

Recommended mitigations and conditions for the IMM Project at the Centennial Site are based on an impact assessment of the Project Description outlined in Section 5 and the vegetation communities and aquatic resources mapped within the Centennial Site project area (see Appendix C and Figure 2). It is estimated that the DTSC cleanup program will cause a surface disturbance of 26.56 acres, inside the area of disturbance for the IMM Project, which will incorporate impacts to approximately 4.35 acres of mapped wetlands and 0.19 acres of mapped streams within the Centennial Industrial Site. Therefore, the impacts and associated mitigation of approximately 4.54 acres of wetlands and streams within the Centennial Industrial Site will be incorporated into the DTSC voluntary cleanup project and is outside the scope of the IMM Project.

The proposed disturbance within the Centennial Site will have both direct and permanent impacts to ephemeral and intermittent aquatic resources and their non-disturbance buffers (see Table 4.0). Site construction may also cause temporary encroachment (disturbance) within the 100-ft non-disturbance buffer of Wolf Creek.

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 and their non-disturbance buffers, as well as any special-status plant and wildlife species that associate with such aquatic resources, within the Centennial Site would be fully mitigated.

7.1 Mitigation Requirements for Aquatic Resources Protected Under the Federal Clean Water Act

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 Centennial Site Aquatic Resources Delineation Report (Matuzak, 2020) 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. As detailed in the CWA, any proposed action that would place fill or dredge material within areas identified as Corps jurisdictional wetlands or waters would require a Department of the Army Section 404 permit and a RWQCB Section 401 Water Quality Certification, or waiver thereof, prior to the placement of fill or dredge material within such features. Fill or dredge impacts to any features regulated under Sections 404 and 401 of the CWA would be required to be mitigated at a minimum

of a 1:1 ratio. Compensatory mitigation would be included as a Section 404 and Section 401 permit condition to be implemented prior to the placement of such dredge and fill material within a "waters of the U.S.," including wetlands, and would ensure the no net loss of such features within the Centennial Site.

Project Related Impacts

Disturbance within the Centennial Site for the proposed IMM Project is estimated to fill a maximum of 0.033 acres of ephemeral streams mapped within the Centennial Site (see Table 4.0).

No proposed fill or dredge material will occur within the main stem of Wolf Creek (perennial stream) as part of the IMM Project.

Nationwide Permit

Under the CWA, any fill within "waters of the U.S.," including wetlands of 0.5 acres or greater 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. Typically, an Individual Permit has a longer timeline than a Nationwide Permit for approval given it includes a 404(b)(1) alternatives analysis that demonstrates that the proposed project has minimized and reduced impacts to the aquatic environment. However, given the proposed IMM Project would fill only 0.033 acres of mapped streams within the Centennial Site, which is less than 0.5 acre trigger for an Individual Permit, the proposed IMM Project disturbance within the Centennial Site would most likely fit under a pre-authorized Nationwide Permit (potentially a Nationwide Permit 44 for Mining Activities or Nationwide Permit #39 for Commercial and Institutional Developments).

Once an application is deemed complete for a Nationwide Permit (generally the submission of a Pre-Construction Notification and supplemental materials) by the Corps Sacramento District, the Corps will process the mapping associated with the Aquatic Resources Delineation and the permit application. As part of the Nationwide Permit process, it is recommended that a functional assessment of the wetlands and waters to be impacted by the proposed site disturbance should be developed. 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 creation of "waters of the U.S." (stream habitat) and/or restoration, payment of an in-lieu fee, and/or purchase of mitigation credits at an approved Corps mitigation or conservation bank.

7.2 Mitigation Measures for Potential Impacts to Stream and Riparian Zones Under CDFW Jurisdiction

Perennial, intermittent, and ephemeral streams within the Centennial Site would likely fall under CDFW jurisdiction as these areas each contain a bed and bank. Any substantial alteration of the bed or bank of any stream within the Centennial Site would most likely require a Streambed Alteration Agreement from the CDFW pursuant to Section 1600 *et. seq.* of the California Fish and Wildlife Code prior to construction, including any disturbance within the main stem of Wolf Creek or other mapped streams within the Centennial Site.

Project Related Impacts

The proposed IMM Project disturbance within the Centennial Site would cause an estimated 0.033 acres of permanent impacts to mapped streams within the Centennial Site. Specific to the main stem of Wolf Creek, no impacts to the creek itself are proposed. Therefore, the proposed disturbance within the mapped stream zones within the Centennial Site would be subject to CDFW jurisdiction and a Streambed Alteration Agreement from the CDFW pursuant to Section 1600 *et. seq.* of the California Fish and Wildlife Code would be required prior to disturbance within such CDFW jurisdiction.

For impacts to any stream that includes the removal of native trees within the stream would require prior consultation and approval by CDFW for native trees with a diameter at breast height of 4 inches or greater. A site revegetation plan would be required to be developed and approved by CDFW as part of a Streambed Alteration Agreement permit condition and native trees planned for removal with a diameter at breast height of 4 inches or greater would need to be mitigated for through planting of native riparian trees within adjacent stream zones not being impacted by the IMM Project, with clear success criteria identified, monitoring and reporting required, and corrective actions to be taken if mitigation measures do not meet the proposed success criteria.

7.3 Compliance with the Nevada County Land Use and Development Code

Aquatic Resources Management Plan

This Management Plan has been developed for the Centennial Site of the IMM Project to comply with Nevada County Land Use and Development Code, Chapter II; Zoning Regulations, Section L-II 4.3.17 (Ordinance Number 2033) requiring such a 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 2000. Land Use and Development Code,

Chapter II: Zoning Regulations. Effective July 27, 2000). Therefore, the development of such a Management Plan is required for the proposed IMM Project as the proposed development impacts such aquatic resources and their non-disturbance buffers. This Management Plan would meet the requirements of the Nevada County Land Use and Development Code, Chapter II; Zoning Regulations, Section L-II 4.3.17 (Ordinance Number 2033) for the proposed IMM Project within the Centennial Site.

7.4 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 Centennial Site 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 Centennial Site as well as their non-disturbance buffer areas (see Appendix F for a description of special-status species and their likelihood to occur within the Centennial Site).

None of these special-status wildlife or plant species that associate with the mapped wetlands and streams within the Centennial Site were identified during the field surveys conducted as part of the development of the Biological Resources Assessment for the Centennial Site (Matuzak, 2021a) and the Technical Memorandum for Centennial Site: Idaho-Maryland Mine Project - Biological Resources Impact Assessment (Matuzak, 2021b). Due to the minimal area of permanent impacts to the two ephemeral streams covered under this Management Plan, there is very low potential for any of the CNPS ranked plants and special-status plant and wildlife species to occur within the Centennial Site IMM Project area and the results of which are included in this Management Plan.

However, as these species have at least a limited potential to occur within the mapped streams of the Centennial Site and their non-disturbance buffers, mitigation measures outlined for those species within the Technical Memorandum for Centennial Site: Idaho-Maryland Mine Project - Biological Resources Impact Assessment (Matuzak, 2021b) 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 streams and their non-disturbance buffers to ensure that potential impacts to special-status species are avoided, minimized, and fully mitigated.

7.5 Management Plan Best Management Practices (BMPs)

ENCROACHMENT INTO THE NON-DISTURBANCE BUFFERS

Temporary impacts to ephemeral, intermittent, and perennial features, as well as their non-disturbance buffers, within the Centennial Site IMM Project 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 not being filled or impacted by the Centennial Site IMM Project or within 100 feet of Wolf Creek (perennial stream), then specific measures have been developed as part of this Management Plan to protect the non-disturbance buffers to such resources within the Centennial Site IMM Project area. The mitigation measures outlined below should be implemented to avoid and minimize such impacts to the non-disturbance buffers of such resources, to the extent feasible. All mapped wetlands within the Centennial Site IMM Project area will be filled and impacted prior to the initiation of the Centennial Site IMM Project and therefore, wetlands are not included as part of this Management Plan. The applicant intends to construct all components of the proposed Centennial Site IMM 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 are associated with areas directly adjacent to the permanent impacts to the ephemeral and intermittent stream resources within the Centennial Site IMM Project area, as outlined within Figure 2 and in Table 4.0. Encroachment into the non-disturbance buffers of such resources that will not be completely filled or impacted by the proposed Centennial Site IMM Project, including any potential temporary disturbance within the 100-foot non-disturbance buffer to Wolf Creek, could have an indirect impact on such protected resources and therefore, mitigation for encroachment into such non-disturbance buffers within the Centennial Site IMM Project 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 streams except for those identified in Table 4.0 in this Management Plan during construction;
- 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; and
- Implement Best Management Practices during and following construction.

REMEDIATION AND RESTORATION OF AREAS ADJACENT TO IMPACTED STREAMS

It is recommended that any areas within the 100-foot non-disturbance buffer to Wolf Creek that may be impacted by development at the Centennial Site by the IMM Project should be restored to pre-construction contours and revegetated immediately following construction. Any other areas of impacts within the 50-foot non-disturbance buffer to any ephemeral or intermittent stream not being filled by the proposed development 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 Wolf Creek and within its 100-foot non-disturbance buffer if such temporary impacts are to occur within those areas within the Centennial Site IMM Project Area. These measures would also be included in any 50-foot non-disturbance buffer to an ephemeral or intermittent stream not being filled by the Centennial Site IMM Project. Where native vegetation and trees will be removed within the non-disturbance buffers within the Centennial Site IMM Project area, the following shall be implemented:

- Placement of rock and rip rap along the embankment of Wolf Creek should be avoided given the proposed Centennial Site IMM Project will not encroach into Wolf Creek;

- Some rock and rip rap can be placed at the top of the embankment of the ephemeral and intermittent streams within the Centennial Site IMM Project, if needed, to protect the embankment(s) from erosion after construction is completed. This would potentially be implemented for ephemeral and intermittent streams that will not be completely filled or impacted and occur directly adjacent to the proposed fill of those streams; and

- Plant willow cuttings from the adjacent willow trees and other native shrubs and riparian trees along the embankments of streams not being impacted and filled as needed. 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 Centennial Site IMM Project Area. Implementation of General and Project Specific Conditions will be required for all permits for the proposed project.

IMPLEMENTATION OF BEST MANAGEMENT PRACTICES DURING CONSTRUCTION

To protect the perennial aquatic resource (Wolf Creek) and its 100-foot non-disturbance buffer area, 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 that will not be disturbed by project development. 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 Centennial Site 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 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 Wolf Creek or any of the ephemeral and intermittent streams within the Centennial Site, 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 Centennial Site IMM Project area and the history of the Centennial Site with past historic mining operations that have occurred. However, the disturbed and developed nature of the Centennial Site is being taken advantage of as the largest percentage of the site to be impacted will be located within the areas of the Centennial Site that have been the most disturbed by historic land uses and will already be impacted by the DTSC clean-up project.

Based on the topography, off-site drainage onto the property, history of mining activities, and existing level of disturbance and development within the Centennial Site, total avoidance of sensitive aquatic resources is not feasible. A single intermittent stream and two small ephemeral streams will be permanently impacted by the proposed project. However, no disturbance will occur to Wolf Creek or its adjacent floodplain located within the Centennial Site.

Alternative project designs and their feasibility were considered as part of the overall Centennial Site IMM Project design. Several alternative project designs would have had greater levels of impact on aquatic resources within the Centennial Site. The selected project design both minimizes impacts to aquatic resources and the permanent impacts are mostly proposed to occur within a largely disturbed area of the site. Fewer and smaller stream features will be disturbed from the implementation of the proposed project compared to other project designs that have been considered within the Centennial Site. Avoidance of impacts to Wolf Creek on the Centennial Site was an important component in determining the optimal project design. The IMM Project design proposed satisfies this project goal.

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 Figure

Figure. Centennial Industrial Site

Grass Valley, CA
Grass Valley 7.5 minute USGS quadrangle
T16N, R8E Section 26

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

SCALE: 1 inch = 300 feet

Legend

Centennial Industrial Site Study Area, 56.41 ac.

Appendix B

USDA Soils Maps

and

USDA Soils Descriptions

Map Scale: 1:4,360 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

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
Ct	Cut and fill land	1.1	2.2%
Pr	Placer diggings	43.2	76.4%
RrE	Rock outcrop-Dubakella complex, 5 to 50 percent slopes	1.8	3.1%
ScE	Secca-Rock outcrop complex, 2 to 50 percent slopes	10.31	18.4%
Totals for Area of Interest		**56.41**	**100.0%**

USDA Soil Mapping Units Descriptions for the Centennial Industrial Site

Centennial Industrial Site

The USDA Soil Survey Mapper (USDA, 2019) indicates that the Centennial Site includes 4 soil types: Cut and fill land (Ct), Placer diggings (Pr), Rock outcrop-Dubakella coplex on 5 to 50 percent slopes (RrE), and Secca-Rock outcrop complex on 2 to 50 percent slopes (ScE). These soil types are described in detail below and their presence, as identified by the USDA online mapper:

- **Cut and fill land (Ct).** This soil type consists of areas that have been altered by activities other than mining such that there are no intact soil characteristics. This soil is not hydric.
- **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.
- **Rock outcrop-Dubakella complex on 5 to 50 percent slopes (RrE).** The Rock outcrop-Dubakella complex consists of well-drained soils on mountains. This complex is made up of 50 percent Dubakella gravelly loam, 40 percent rock outcrop and 10 percent included soils. These soils formed from weathered rocks with a large amount of serpentinitic minerals. Drainage is slow and runoff is very high. These soils are not hydric. A typical profile for this complex consists of dark brown (7.5 YR 3/2) gravelly loam from 0 to 2 inches underlain by a reddish brown (5YR 3/4) gravelly clay loam from 2 to 10 inches. This layer is underlain by a variegated yellowish brown (10YR 4/4) and reddish brown (7.5YR 4/4) very cobbly clay from 11 to 21 inches. This layer underlain by a blue green, hard, fractured and partly weathered serpentinized layer at 21 inches. Several special-status plant species have the potential to occur on the gabbro soils of the Dubakella and Secca-Rock complex soils within the Centennial Site (Boes 2019, see Section 4.4 below).
- **Secca-Rock outcrop complex on 2 to 50 percent slopes (ScE).** This complex consists of moderately well-drained soils on gently sloping to steep mountain terrain. These soils formed from basic igneous and metamorphic rock. Drainage is slow and runoff is slow to rapid. These soils are not hydric. A typical profile for Secca-Rock outcrop complex consists of brown (5YR 3/4) gravelly silt loam from 0 to 6 inches. This layer is underlain by a reddish brown (5YR 3/4) gravelly silt loam

from 6 to 15 inches. This layer is underlain by dark reddish brown (5YR 3/4) cobbly silty clay loam from 15 to 22 inches. From 22 to 36 inches is a strong brown (7.5YR 4/4) cobbly clay, which is underlain by a yellowish brown (10YR 5/6) cobbly clay from 36 to 45 inches. At 45 inches is weathered metabasic rock.

Appendix C

Vegetation Community Map

and

Vegetation Community Descriptions

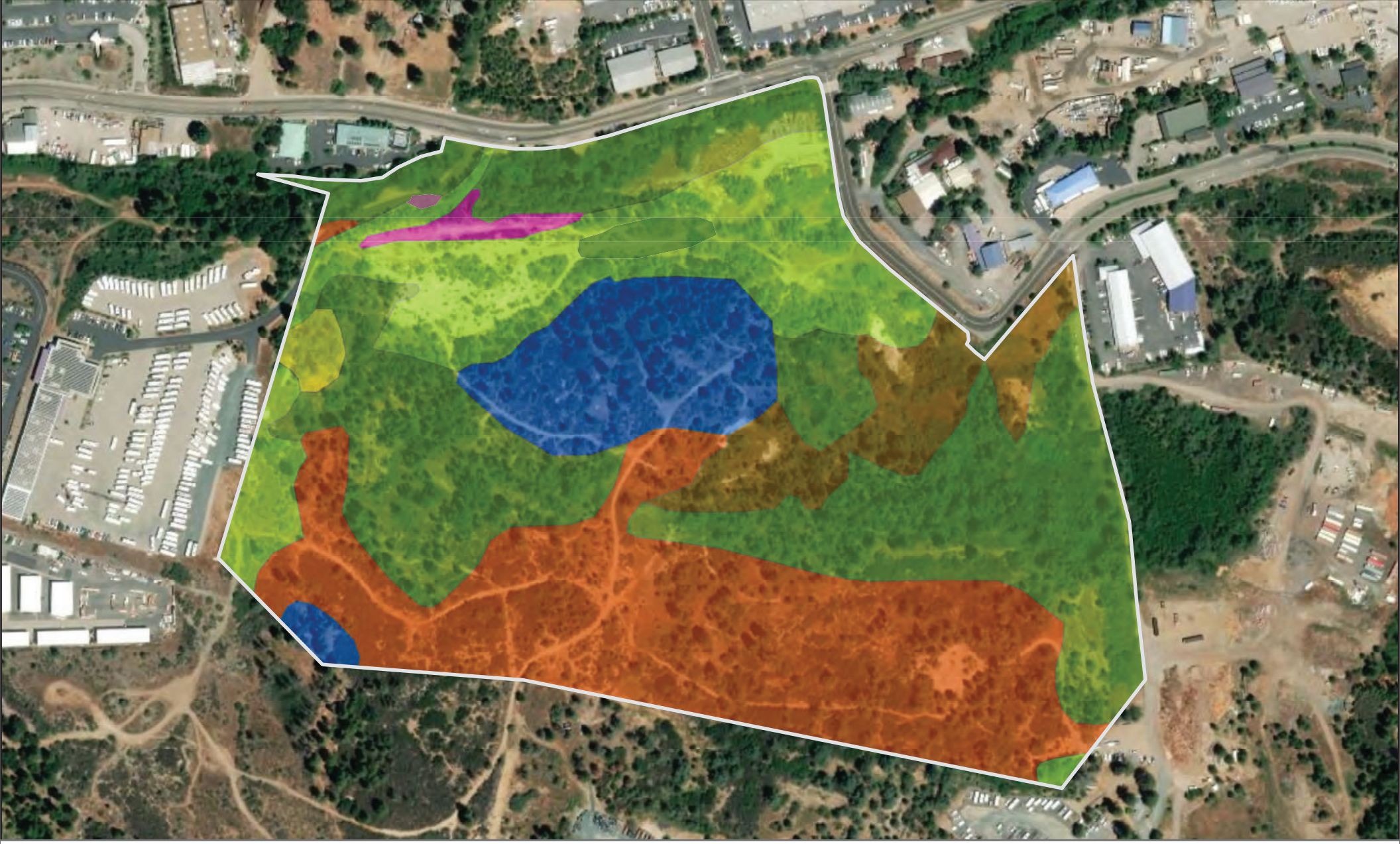


Figure. Vegetation Communities within the Centennial Industrial Site

Legend

- Centennial Industrial Site Study Area

Vegetation Type

- Annual Grassland
- Fresh Emergent Wetland
- Mixed Chaparral
- Montane Hardwood-Conifer
- Montane Hardwood
- Montane Riparian
- Wet Meadow

SCALE: 1 inch = 300 feet

Grass Valley, CA
Grass Valley 7.5 minute USGS quadrangle
T16N, R8E Section 26

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

Description of Mapped Vegetation Communities for the Centennial Industrial Site

Vegetation communities within the Centennial Site include the following vegetation community types as described below.

Montane Hardwood

Montane hardwood habitat is identified within the Centennial Site in small, localized stands. Montane hardwood is characterized here by stands of an overstory of California black oak and occasionally canyon live oak (*Quercus chrysolepis)*. 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 (*Rubus armenicus)* 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 Centennial 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.

Mixed Chaparral

Mixed chaparral is identified within the Centennial Site. Mixed chaparral is primarily associated with the gabbro soils of the Secca and Dubekella complexes that are known to occur within the southwestern section of the site. In the gabbro, this vegetation type is relatively intact and is characterized by whiteleaf manzanita, buck brush (*Ceanothus cuneatus),* Oregon white oak (*Quercus garryana* var. *semota),* chaparral pea (*Pickeringia montana), and* occasionally scattered foothill pine. McNab cypress (*Hesperocyparis macnabiana)* is occasional in the southwestern portions of the Centennial Site. With the exception of occasional natural and manmade openings within this habitat type, mixed chaparral forms almost continuous stands. Mixed chaparral is also present in heavily disturbed areas, both recent and historic disturbances. In the ruderal habitats there is a scattered formation of chaparral, usually characterized by whiteleaf manzanita with buck brush and coyote brush (*Baccharis pilularis)*.

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 Centennial 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 solstitalis),* garden burnett (*Poterium sanguisorba),* soft chess (*Bromus hordeaceous),* bisnaga (*Ammi visnaga),* and patches of Himalayan blackberry.

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 and (2) along the stretch of the main stem of 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 main stem of Wolf Creek is dominated by white alder (*Alnus rhombifolia)* 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.

Wet Meadow

Wet meadows generally contain a single vegetation stratum and are generally dominated by forbs and gramanoids. 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 Centennial Site are typically created where extreme disturbance has occurred in the past or the presence of placer diggings. These wet meadows are characterized by *Agrostis, Juncus* spp. and Baltic rush.

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 fresh emergent wetlands identified within the Centennial Site. This habitat type within the Centennial Site is dominated by cattails (*Typha* spp.), arroyo willow, and pacific rush (*Juncus effuses* ssp. *pacificus)*.

Appendix D

Plants Observed During Site Surveys

VASCULAR PLANTS OCCURRING IN CENTENNIAL SITE

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Acer macrophyllum	Bigleaf maple	native	Tree	-	FACU	-
Agoseris retrorsa	Spear leaved agoseris	native	perennial herb	-	-	-
Agrostis gigantea	Creeping bentgras	non-native	perennial grass	-	FAC	-
Ailanthus altissima	Tree of heaven	non-native (invasive)	Tree	-	FACU	Moderate
Aira caryophyllea	Silvery hairgrass	non-native (invasive)	annual grass	-	FACU	-
Allium amplectens	Narrow leaved onion	Native	perennial herb (bulb)	-	-	-
Alnus rhombifolia	White alder	Native	Tree	-	FACW	-
Ammi visnaga	Bisnaga	non-native	annual, biennial herb	-	-	-
Anaphalis margaritacea	Pearly everlasting	Native	perennial herb	-	FACU	-
Andropogon virginicus var. virginicus	Broomsedge bluestem	non-native	perennial grass	-	FAC	-
Arbutus menziesii	Madrono	Native	Tree	-	-	-
Arctostaphylos mewukka ssp. mewukka	Indian manzanita	Native	Shrub	-	-	-
Arctostaphylos viscida ssp. viscida	Smooth white leaf manzanita	Native	tree, shrub	-	-	-
Artemisia douglasiana	California mugwort	Native	perennial herb	-	FACW	-
Asclepias sp.	-	-	-	-	-	-
Asclepias speciosa	Showy milkweed	Native	perennial herb	-	FAC	-
Avena sp.	-	-	-	-	-	-
Baccharis pilularis	Coyote brush	Native	Shrub	-	-	-
Berberis aquifolium var. repens	Creeping oregon grape	Native	Shrub	-	FACU	-
Brodiaea minor	Low brodiaea	Native	perennial herb	-	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Brodiaea sierrae	Sierra foothills brodiaea	Native	perennial herb	Rank 4.3	-	-
Bromus hordeaceus	Soft chess	non-native (invasive)	annual grass	-	FACU	Limited
Bromus madritensis	Foxtail chess, foxtail brome	non-native	annual grass	-	FACU	-
Calocedrus decurrens	Incense cedar	Native	Tree	-	-	-
Calycadenia multiglandulosa	Rosin weed	Native	annual herb	-	-	-
Carex feta	Green sheathed sedge	Native	perennial grasslike herb	-	FACW	-
Ceanothus cuneatus	Buck brush	Native	Shrub	-	-	-
Ceanothus integerrimus	Deer brush	Native	Shrub	-	-	-
Ceanothus lemmonii	Lemmon's ceanothus	Native	Shrub	-	-	-
Centaurea solstitialis	Yellow starthistle	non-native (invasive)	annual herb	-	-	High
Centaurium tenuiflorum	Slender centaury	non-native	annual herb	-	FACW	-
Centranthus sp.	-	-	-	-	-	-
Centromadia fitchii	Spikeweed	Native	annual herb	-	FACU	-
Chlorogalum pomeridianum	Amole	Native	perennial herb	-	-	-
Chondrilla juncea	Skeleton weed	non-native (invasive)	perennial herb	-	-	Moderate
Cichorium intybus	Chicory	non-native	perennial herb	-	FACU	-
Cirsium vulgare	Bullthistle	non-native (invasive)	perennial herb	-	FACU	Moderate
Cornus nuttallii	Mountain dogwood	Native	Shrub	-	FACU	-
Cornus sericea	American dogwood	Native	Shrub	-	FACW	-
Cortaderia jubata	Andean pampas grass	non-native (invasive)	perennial grass	-	FACU	High
Crataegus monogyna	Hawthorn	non-native (invasive)	Shrub	-	FAC	Limited
Croton setiger	Turkey-mullein	Native	perennial herb	-	-	-
Cynodon dactylon	Bermuda grass	non-native (invasive)	perennial grass	-	FACU	Moderate
Cynosurus echinatus	Dogtail grass	non-native (invasive)	annual grass	-	-	Moderate
Cyperus eragrostis	Tall cyperus	Native	perennial grasslike herb	-	FACW	-
Dactylis glomerata	Orchardgrass	non-native (invasive)	perennial grass	-	FACU	Limited

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Danthonia californica	California oatgrass	Native	perennial grass	-	FAC	-
Deschampsia elongata	Hairgrass	Native	perennial grass	-	FACW	-
Elymus caput-medusae	Medusa head	non-native	annual grass	-	-	-
Elymus elymoides	Squirrel tail grass	Native	perennial grass	-	FACU	-
Elymus hispidus	Intermediate wheatgrass	non-native	perennial grass	-	-	-
Epilobium sp.	-	-	-	-	-	-
Epipactis gigantea	Stream orchid	Native	perennial herb	-	OBL	-
Eriodictyon californicum	Yerba santa	Native	Shrub	-	-	-
Eriophyllum lanatum	Wooly sunflower	Native	perennial herb	-	-	-
Euthamia occidentalis	Western goldenrod	Native	perennial herb	-	FACW	-
Festuca arundinacea	Reed fescue	non-native (invasive)	perennial grass	-	FAC	Moderate
Festuca idahoensis	Blue fescue	Native	perennial grass	-	FACU	-
Festuca microstachys	Small fescue	Native	annual grass	-	-	-
Ficus sp.	-	-	-	-	-	-
Frangula californica ssp. tomentella	Hoary coffeeberry	Native	Shrub	-	-	-
Frangula rubra	Red buckthorn	Native	Shrub	-	-	-
Fremontodendron decumbens	Pine hill flannelbush	Native	Shrub	FE, SR, Rank 1B.2	-	-
Galium porrigens	Climbing bedstraw	Native	vine, shrub	-	-	-
Gamochaeta sp.	-	-	-	-	-	-
Garrya fremontii	Fremont's silk tassel	Native	Shrub	-	-	-
Grindelia camporum	Gumweed	Native	perennial herb	-	FACW	-
Grindelia sp.	-	-	-	-	-	-
Hedera helix	English ivy	non-native (invasive)	vine, shrub	-	FACU	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Hemizonella minima	Opposite leaved tarweed	Native	annual herb	-	-	-
Hesperocyparis macnabiana	Macnab cypress	Native	tree, shrub	-	-	-
Hirschfeldia incana	Mustard	non-native (invasive)	perennial herb	-	-	Moderate
Holcus lanatus	Common velvetgrass	non-native (invasive)	perennial grass	-	FAC	Moderate
Hypericum perforatum ssp. perforatum	Klamathweed	non-native	perennial herb	-	FACU	-
Hypochaeris radicata	Hairy cats ear	non-native (invasive)	perennial herb	-	FACU	Moderate
Juncus articulatus ssp. articulatus	Jointed rush	Native	perennial grasslike herb	-	OBL	-
Juncus balticus ssp. ater	Baltic rush	Native	perennial grasslike herb	-	FACW	-
Juncus confusus	Colorado rush	Native	perennial grasslike herb	-	FAC	-
Juncus effusus ssp. pacificus	Pacific rush	Native	perennial grasslike herb	-	FACW	-
Juncus trilocularis	-	Native	annual grasslike herb	-	-	-
Lactuca serriola	Prickly lettuce	non-native (invasive)	annual herb	-	FACU	-
Lathyrus latifolius	Sweet pea	non-native	perennial herb	-	-	-
Leontodon saxatilis	Hawkbit	non-native	annual herb	-	FACU	-
Leucanthemum vulgare	Oxe eye daisy	non-native (invasive)	perennial herb	-	FACU	Moderate
Lilium humboldtii ssp. humboldtii	Humboldt lily	Native	perennial herb	Rank 4.2	-	-
Lonicera hispidula	Pink honeysuckle	Native	vine, shrub	-	FACU	-
Lonicera interrupta	Chaparral honeysuckle	Native	vine, shrub	-	-	-
Lotus corniculatus	Bird's foot trefoil	non-native (invasive)	perennial herb	-	FAC	-
Lysimachia arvensis	Scarlet pimpernel	non-native	annual herb	-	FAC	-
Madia gracilis	Gumweed	Native	annual herb	-	-	-
Melica californica	California melic	Native	perennial grass	-	-	-
Melilotus albus	White sweetclover	non-native (invasive)	annual, biennial herb	-	-	-
Muhlenbergia rigens	Deergrass	Native	perennial grass	-	UPL	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Panicum sp.	-	-	-	-	-	-
Parthenocissus sp.	-	-	-	-	-	-
Penstemon heterophyllus	Foothill penstemon	Native	perennial herb	-	-	-
Pickeringia montana	Chaparral pea	Native	Shrub	-	-	-
Pinus ponderosa	Yellow pine	Native	Tree	-	FACU	-
Pinus sabiniana	Bull pine	Native	Tree	-	-	-
Plantago lanceolata	Ribwort	non-native (invasive)	perennial herb	-	FACU	Limited
Polygala cornuta	Sierra milkwort	Native	perennial herb	-	FACW	-
Polypogon sp.	-	-	-	-	-	-
Populus fremontii ssp. fremontii	Cottonwood	Native	Tree	-	FAC	-
Poterium sanguisorba	Garden burnet	non-native	perennial herb	-	UPL	-
Prunella vulgaris	Self heal	Native	perennial herb	-	FACU	-
Prunus subcordata	Sierra plum	Native	tree, shrub	-	-	-
Pyracantha sp.	-	-	-	-	-	-
Quercus garryana var. semota	Oregon white oak	Native	Tree	-	FACU	-
Rhamnus crocea	Redberry	Native	Shrub	-	-	-
Rosa canina	Dog rose	non-native	Shrub	-	-	-
Rubus armeniacus	Himalayan blackberry	non-native (invasive)	Shrub	-	FACU	High
Rubus leucodermis	White bark raspberry	Native	Shrub	-	FACU	-
Rumex crispus	Curly dock	non-native (invasive)	perennial herb	-	FAC	Limited
Salix exigua	Narrowleaf willow	Native	tree, shrub	-	FACW	-
Salix laevigata	Polished willow	Native	Tree	-	FACW	-
Salix lasiolepis	Arroyo willow	Native	tree, shrub	-	FACW	-
Salvia sonomensis	Sonoma sage	Native	perennial herb	-	-	-
Schoenoplectus acutus var. occidentalis	Tule	Native	perennial grasslike herb	-	OBL	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Scutellaria tuberosa	Dannie's scullcap	Native	perennial herb	-	-	-
Solidago sp.	-	-	-	-	-	-
Toxicodendron diversilobum	Poison oak	Native	vine, shrub	-	FAC	-
Tragopogon dubius	Goat's beard	non-native (invasive)	perennial herb	-	-	-
Trichostema lanceolatum	Vinegarweed	Native	annual herb	-	FACU	-
Trifolium hirtum	Rose clover	non-native (invasive)	annual herb	-	-	Limited
Trifolium sp.	-	-	-	-	-	-
Triteleia hyacinthina	Wild hyacinth	Native	perennial herb	-	FAC	-
Typha domingensis	Cattail	Native	perennial herb	-	OBL	-
Verbascum blattaria	Moth mullein	non-native	perennial herb	-	UPL	-
Verbascum thapsus	Woolly mullein	non-native (invasive)	perennial herb	-	FACU	Limited
Vitis californica	California wild grape	Native	vine, shrub	-	FACU	-
Wyethia angustifolia	Narrow leaved mule ears	Native	perennial herb	-	FACU	-
Wyethia bolanderi	Bolander's wyethia	Native	perennial herb	-	-	-

Appendix E

Photo Log

Photos of the Field Surveys of the Centennial Industrial Site

Photo 1. Spring associated with WM-8 in the western section of the Centennial Industrial Site.

Photo 2. Wetland area WM-3 in the northwestern section of the Centennial Industrial Site.

Photo 3. Mapped drainage connecting WM-10 with WM-3 in the northern/northwestern section of the Centennial Industrial Site.

Photo 4. Roadside wetland WM-11 in the western section of the Centennial Industrial Site.

Photo 5. Wetland area WM-2 in the northwestern section of the Centennial Industrial Site.

Photo 6. Narrow wetland area of WM-5 in the western section of the Centennial Industrial Site.

Photo 7. Wetland area WM-12 in the central section of the Centennial Industrial Site.

Photo 8. Marsh wetland (MA-1) in the eastern section of the Centennial Industrial Site.

Photo 9. Wetland area MA-1 in the eastern section of the Centennial Industrial Site.

Photo 10. Wetland area (WM-4) in the eastern section of the Centennial Industrial Site.

Photo 11. Large riparian area (RI-1) in the eastern section of the Centennial Industrial Site.

Photo 12. Edge of large riparian area (RI-1) in the eastern section of the Centennial Industrial Site.

Photo 13. Previously delineated wetland area in the western section of the Centennial Industrial Site. No hydrophytic vegetation or hydric soils were present in this area in December 2018. Soil data point taken immediately southeast of mapped wetland WM-3 (see attached delineation figures).

Photo 14. Frozen, sandy loam hydric soil associated with WM-3 in the western section of the Centennial Industrial Site. Wetlands WM-3 and WM-4 were associated with sandy soils.

Photo 15. Hydric soils associated with wetland WM-5 in the western section of the Centennial Industrial Site. The northwestern section of this project area contained varied soil types.

Photo 16. Sandy loam hydric soils associated with wetland WM-3 in the western section of the Centennial Industrial Site.

Appendix F

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

Common and Scientific Name	Legal Status[1] Federal/State/ CNPS	Habitat Association	Identification Period	Potential for Species/Habitat Presence
Stebbins' morning-glory *Calystegia stebbinsii*	--/--/1.B2	Gabbroic or serpentinite soils. Openings in chaparral, cismontane woodland, lower montane coniferous forest, from 980-4,330 feet.	Apr- Jul	**Low.** Potential for occurrence in openings and under chaparral in gabbroic soils. Known 4 miles to east on gabbroic chaparral on Oceola Ridge. Was not observed during targeted 2019 field surveys.
Sierra arching sedge *Carex cyrtostachya*	--/--/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 *Carex xerophila*	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forests on serpentinite and gabbroic substrates, from 1,400 – 2,525 feet.	Mar- Jun	**Low.** Potential for occurrence in openings and under chaparral in gabbroic soils. Known 4 miles away on Oceola Ridge in gabbroic chaparral. Was not observed during 2019 field surveys.
Red Hills soaproot *Chlorogalum grandiflorum*	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forests on serpentinite and gabbroic substrates, from 800 – 5,545 feet.	May-Jun	**Low.** Potential for occurrence in openings and under chaparral in gabbroic soils. Known over 10 miles south in Bunch Canyon south of Colfax, with no known occurrences to north. Was not observed during 2019 field surveys.
Pine Hill flannelbush *Fremontodendron decumbens*	FE/CR/1B.2	Chaparral, cismontane woodland on serpentinite and gabbroic substrates, from 1,390 – 2,495 feet.	Apr- July	**High.** Potential for occurrence in openings and under chaparral in gabbroic soils in Idaho Maryland study area. Known from study area from CNDDB Occurrence #14. Field surveys in 2019 expanded boundaries of known occurrence.

Common and Scientific Name	Legal Status[1] Federal/State/ CNPS	Habitat Association	Identification Period	Potential for Species/Habitat Presence
Butte County fritillary *Fritillaria eastwoodiae*	--/--/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), but fruits would have been visible for individuals from this genus and they were not observed during 2019 field surveys.
Finger rush *Juncus digitatus*	--/--/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 *Lathyrus sulphureus* var. *argillaceus*	--/--/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 *Lathyrus sulfureus* with no variety designation, but not observed during 2019 surveys.
Cantelow's lewisia *Lewisia cantelovii*	--/--/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 *Plagiobothrys glyptocarpus* var. *modestus*	--/--/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.

Common and Scientific Name	Legal Status[1] Federal/State/ CNPS	Habitat Association	Identification Period	Potential for Species/Habitat Presence
Sierra blue grass *Poa sierrae*	--/--/1B.3	Openings in lower montane coniferous forest, 1,195-4,920 feet.	Apr-Jul	**Low.** There is only marginal suitable habitat for this species in the study area, primarily in the ponderosa pine forest, and in the forested areas along Wolf Creek. Known from Steephollow Creek from a collection from 1964. Was not observed during 2019 field surveys.
Brownish beaked-rush *Rhynchospora capitellata*	--/--/2B.2	Wet areas (marshes, swamps, meadows, and seeps) in montane coniferous forest, from 145-6,560 feet.	Jul-Aug	**Low.** 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 *Sidalcea stipularis*	--/CE/1B.1	Marshes and swamps (montane freshwater), from 2,295-2,395 feet.	Jul-Aug	**Low.** 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.

[1]Status 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; CNDDB 2019; USFWS 2019, and Calflora 2019.

Common and Scientific Name	Legal Status[1] Federal/State	Habitat Requirements	Potential for Species/Habitat Presence
Amphibians			
California red-legged frog *Rana draytonii*	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 within the eastern section of the Centennial Site contain marginal suitable habitat for the species.
Foothill yellow-legged frog *Rana boylii*	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 main stem of Wolf Creek within the northern section of the Centennial Site contains marginal suitable habitat for the species.
Reptiles			
Western pond turtle *Emys marmorata*	--/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 Wolf Creek and perennial aquatic resources such as the freshwater emergent marsh habitats within the eastern section of the Centennial Site.
Coast horned lizard *Phrynosoma blainvillii*	--/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 Centennial Site, including open chaparral habitats.
Mammals			
Townsend's big-eared bat *Corynorhinus townsendii*	--/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 decant structure in the northwestern section of the Centennial Site.

Common and Scientific Name	Legal Status[1] Federal/State	Habitat Requirements	Potential for Species/Habitat Presence
Birds			
California black rail *Laterallus jamaicensis coturiculus*	--/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 eastern section of the Centennial Site contain marginal suitable habitat for the species.
Cooper's hawk *Accipiter cooperii*	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**; however, the woodland habitats within the Centennial Site contain marginal suitable habitat for the species.
Invertebrates			
Western bumble bee *Bombus occidentalis*	--/--	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 20th of that year. This species is of conservation concern and is listed as S1, Critically Imperiled, by NatureServe and is listed on the CNDDB.	**Very Low.** Unlikely to occur in the Centennial Site or surrounding region.

[1]Status 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: CNDDB 2019 and USFWS 2019

Appendix G

CNDDB 5-Mile Buffer Figure

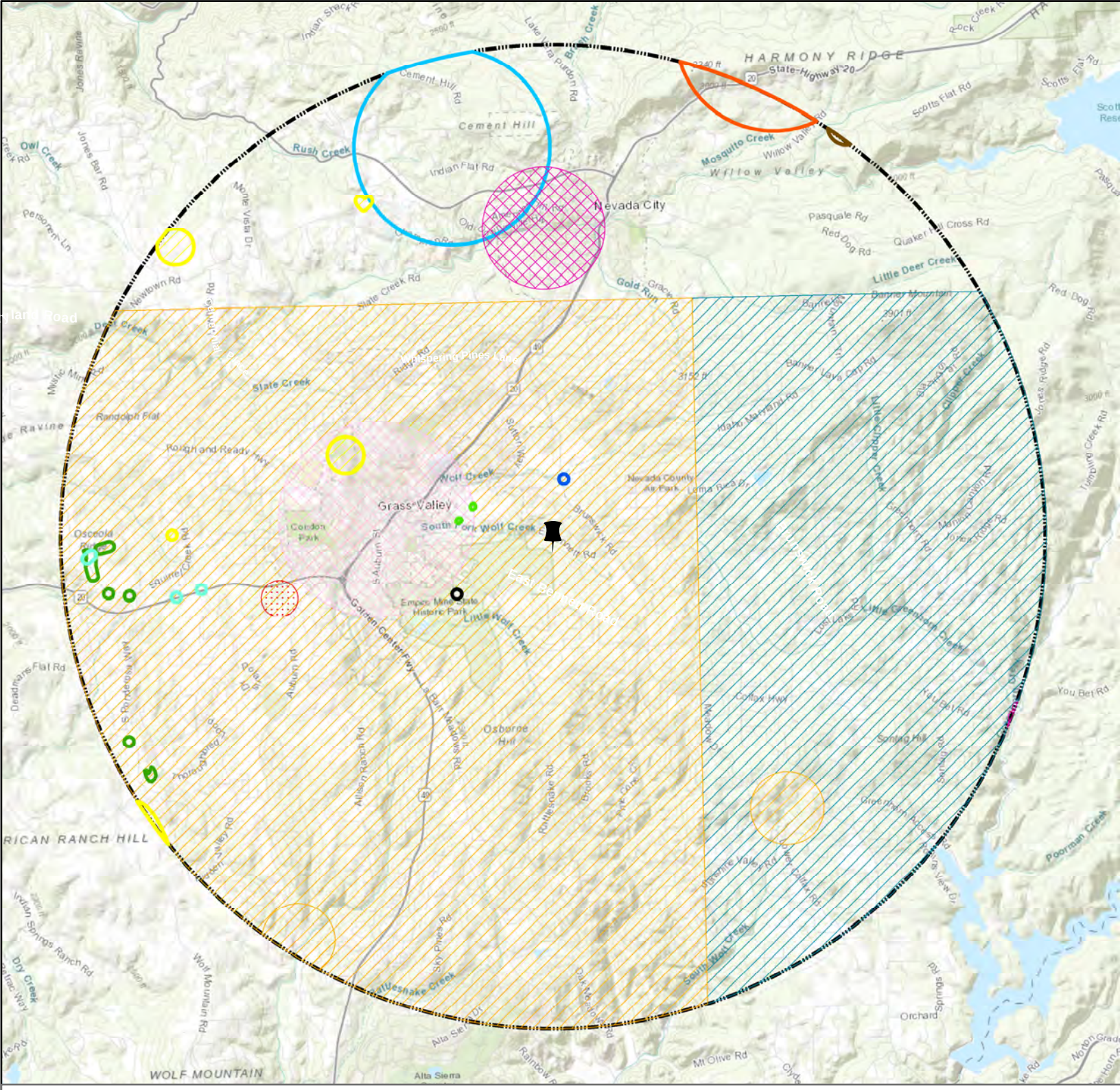


Figure. Known Occurrences of Special Status Species within 5 Miles of the Centennial Site

Legend

FiveMileProjectBuffer

Project Area

Common Name, Scientific Name, FESA, CESA, CNPS

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

0 1 2 Miles

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/ft^2:

- A commonly used application range is 80 – 100 seed^{2}s/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/ft^2 for our site. The seeds will be hydroseeded or hand seeded (same recommended application rate, 80 – 100 seeds/ft^2). Calculate the application rate (lb PLS/ac) for the seed mix listed in Table 1.

Given:

Total seed density = 100 seeds/ft^2
1 acre = 43,560 ft^2

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

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

b. Calculations

Lotus purshianus: $\frac{11 \text{ seeds/ft}^2 \times 43{,}560 \text{ ft}^2\text{/ac}}{108{,}500 \text{ seeds/lb PLS}} = 4.4 \text{ lb PLS/ac}$

Nassella cernua: $\frac{11 \text{ seeds/ft}^2 \times 43{,}560 \text{ ft}^2\text{/ac}}{215{,}200 \text{ seeds/lb PLS}} = 2.2 \text{ lb PLS/ac}$

Bromus carinatus: $\frac{23 \text{ seeds/ft}^2 \times 43{,}560 \text{ ft}^2\text{/ac}}{72{,}600 \text{ seeds/lb PLS}} = 13.8 \text{ lb PLS/ac}$

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.

COUNTY OF NEVADA
COMMUNITY DEVELOPMENT AGENCY
950 MAIDU AVENUE NEVADA CITY, CA 95959-8617
(530) 265-1222 FAX (530) 265-8794 mynevadacounty.com

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.

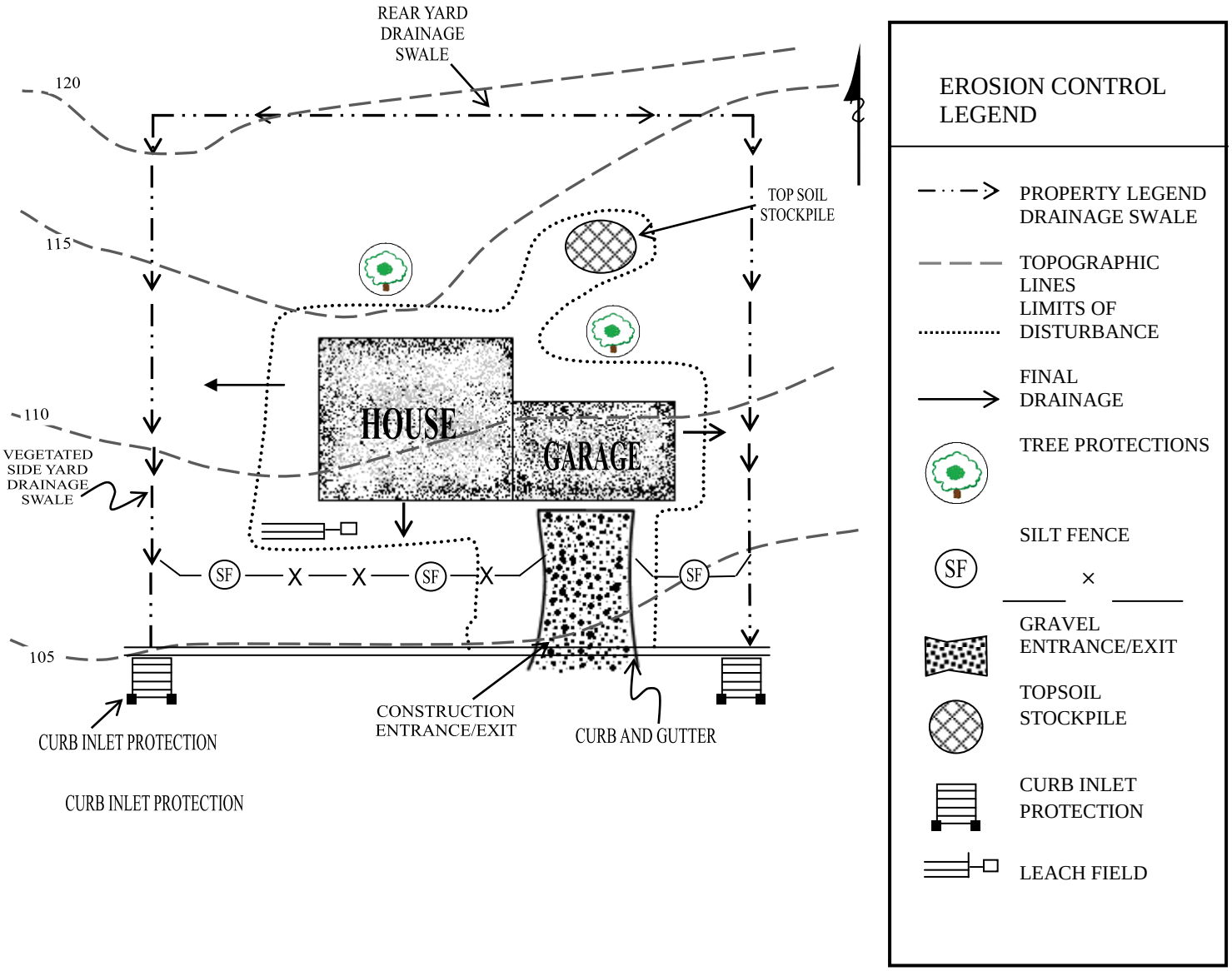
Information on Erosion/Sediment Control Plans:

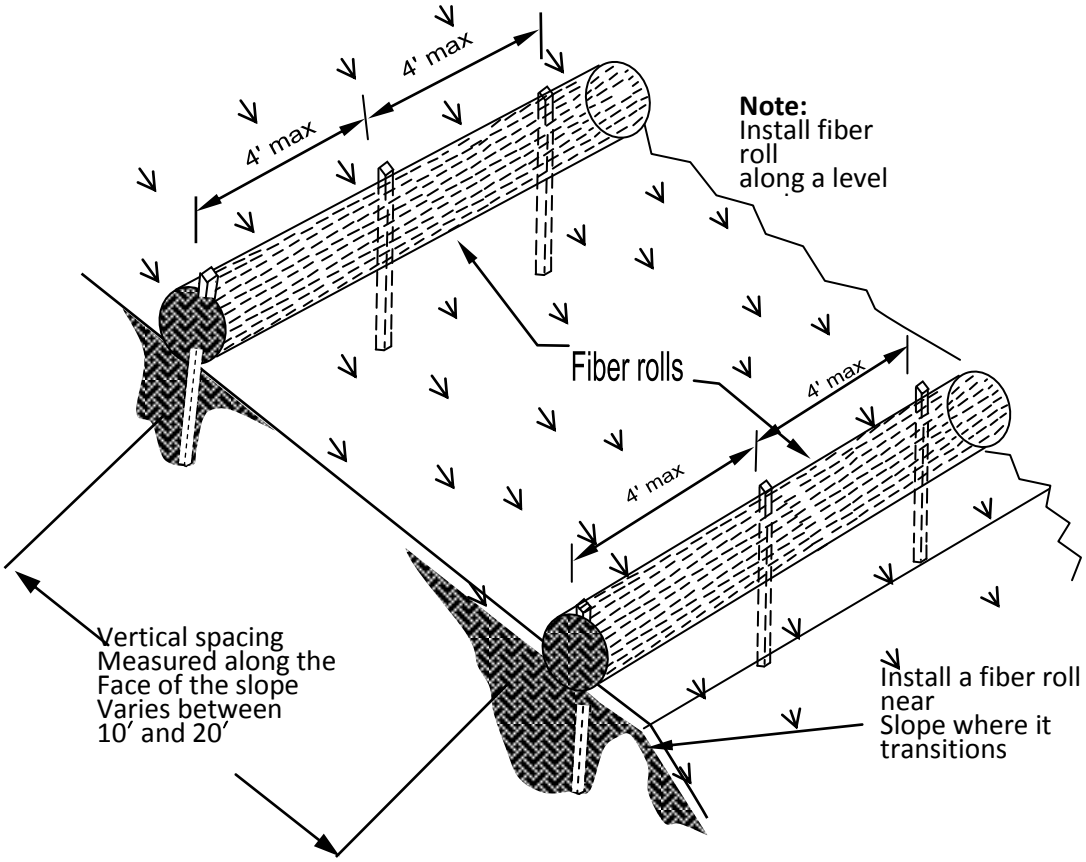
- Location of proposed building site
- Property lines
- Existing slope direction and grade identified.
- Proposed contour lines (if grading permit required)
- Location and any needed details of erosion/sediment control measures
- Construction entrance/exit
- Drainage plan with details of drainage control 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.

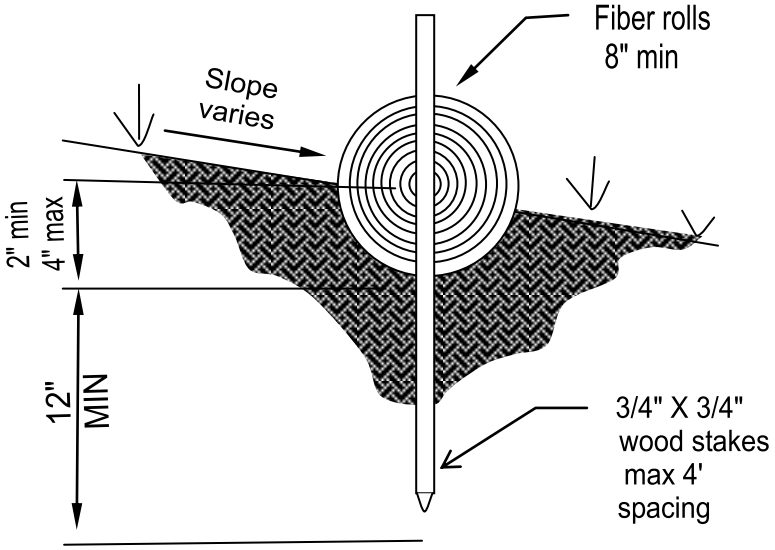
SAMPLE EROSION /SEDIMENT CONTROL PLAN FOR A SINGLE FAMILY RESIDENCE UNDER CONSTRUCTION





TYPICAL FIBERT ROLL INSTALLATION

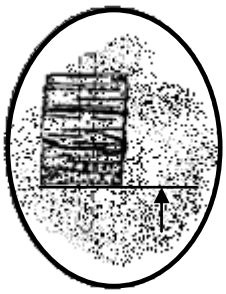
N.T.S.

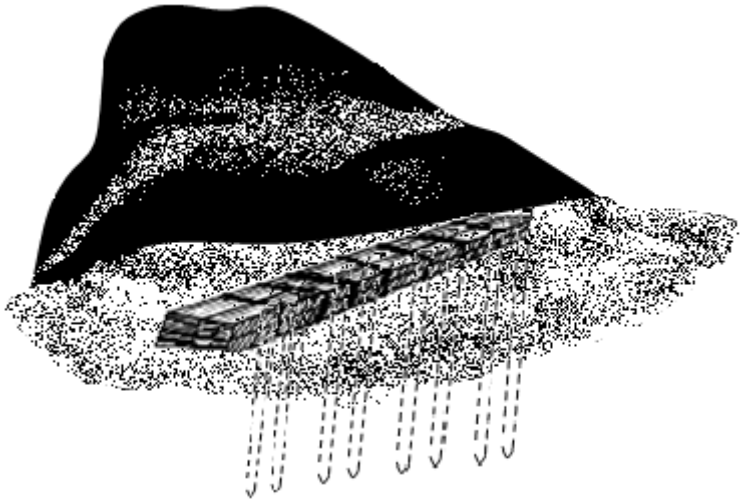


ENTRENCHMENT DETAIL

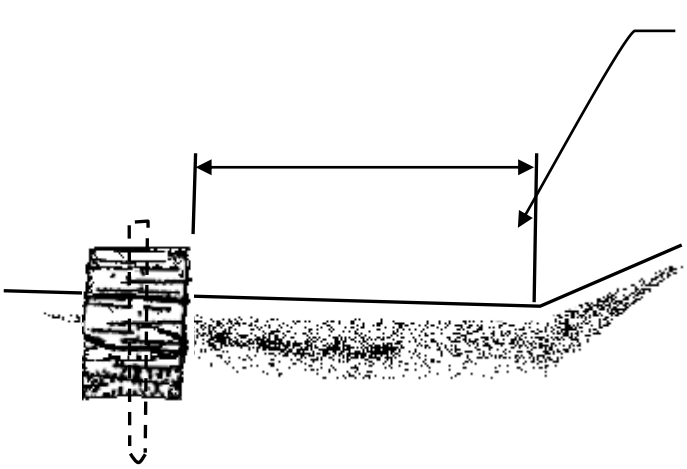
N.T.S.

California Storm water BMP Handbook
Construction
www.cabmphandbooks.com



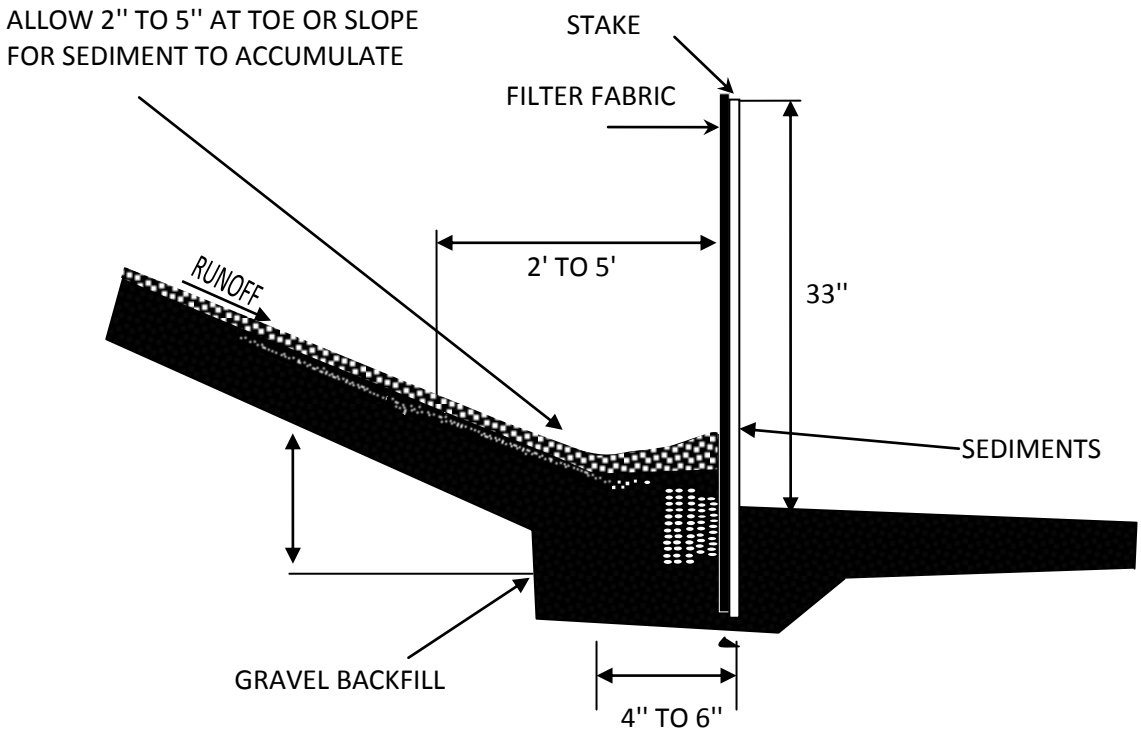


SOIL NOTE:
EMBED
STRAW BALE
4'' MIN. INTO

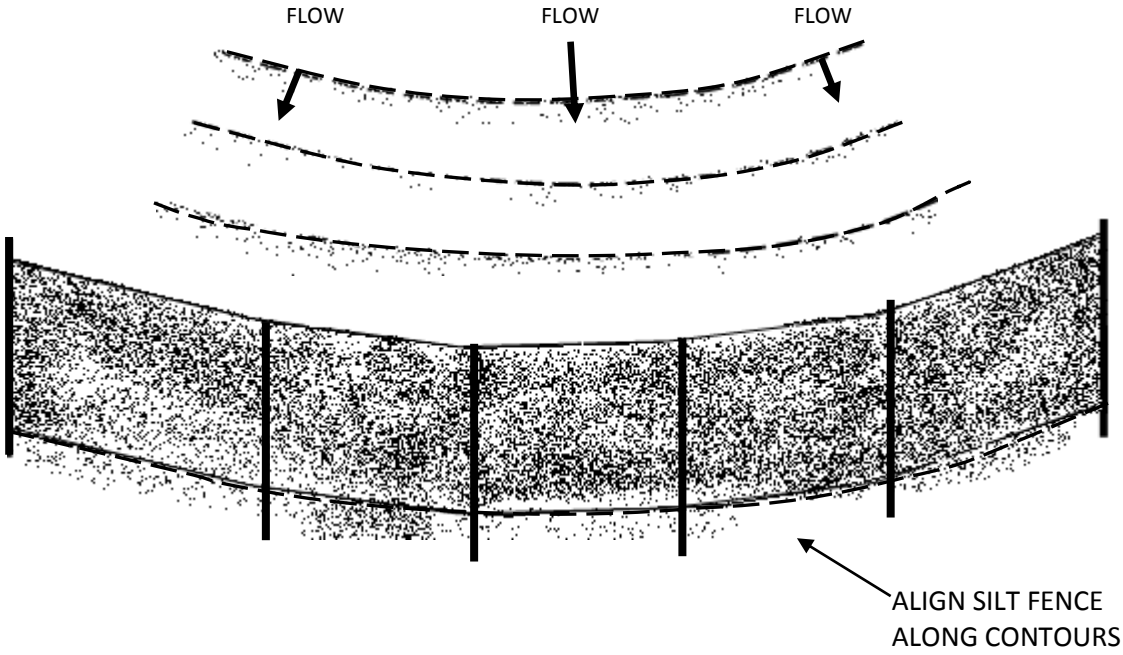


1

STRAW BALE DIKE



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

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

Mountainous Conifer Area

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

Seeding Mixtures for Permanent Cover
Foothill Areas

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

Mountainous Conifer Zone

Mixture	Lbs/1000 Sq. Ft.	Lbs/Acre (Broadcast)
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:

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