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To: Rise Grass Valley Inc.
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Date: January 29, 2021

Re: Updated Technical Memorandum for the Idaho-Maryland Mine Project – South Fork Wolf Creek Discharge Biological Resources Assessment

Introduction

The prepared Technical Memorandum ("Technical Memo") is a Biological Resources Impact Assessment of the proposed discharge to South Fork Wolf Creek from the Idaho-Maryland Mine Project ("IMM Project"). As a component of the proposed IMM Project, Rise Grass Valley Inc. ("Rise Grass Valley" or "Rise") proposes to construct an aboveground discharge pipeline from a water treatment facility located within the Brunswick Industrial Site ("Brunswick Area"), along an existing access road on the property, to a new outfall located at South Fork Wolf Creek, as shown in Figure 3 in the appendices. The proposed discharge outfall will be located within the northwestern section of the Brunswick Area, entirely within the property boundaries. The IMM Project proposes to discharge a maximum 5.6 cubic feet per second (cfs) of treated mine water to South Fork Wolf Creek.

Background Technical Reports

This Tech Memo references and incorporates the findings of three stand-alone reports completed for the Brunswick Area of the IMM Project:

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

- Brunswick Industrial Site and East Bennett Road Right of Way (ROW) Watercourse/Wetlands/Riparian Areas Management Plan (Greg Matuzak Environmental Consulting LLC, 2021b).

Additionally, this Tech Memo relies on the results of three additional studies that were completed to assess the hydrology of the Brunswick Site and the geomorphic characterization of the South Fork Wolf Creek within the IMM Project - Brunswick Area and the potential downstream hydrological and geomorphic impacts of the proposed discharge to South Fork Wolf Creek. The additional studies include the following:

- Rise Grass Valley Inc. Hydrology and Hydraulic Calculations for Preliminary Drainage Analysis and Detention Basin Sizing for Centennial and Brunswick Sites (Nevada County Engineering, Inc., November 2019);
- Geomorphic Assessment, South Fork Wolf Creek, Near Grass Valley, California (Balance Hydrologics, Inc., March 2020); and
- Idaho Maryland Water Treatment Plant Design Report (Linkan Engineering, November 2019).

Potential Impacts

The proposed development of the discharge pipeline, discharge outfall, and the maximum discharge of 5.6 cfs of treated mine water would have the following potential impacts to South Fork Wolf Creek:

- The groundwater from the mine will be pumped to an existing clay-lined settling pond for subsequent water treatment. An aboveground pipe will convey treated water from the water treatment facility at the IMM Project - Brunswick Area along an existing access road on the property to an outfall located at South Fork Wolf Creek. The pipe and discharge point are located entirely within the property boundaries.

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

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

  IMPACT 2: Replacement of deteriorated culvert at South Fork Wolf Creek.

- Initial dewatering of the underground workings and subsequent operational dewatering of the mine are estimated to have a maximum discharge rate of 5.6 cfs.

  IMPACT 3: Discharge of treated mine water to South Fork Wolf Creek has the potential

to impact sensitive biological aquatic resources within South Fork Wolf Creek due to changes in temperature, sediment transport, water quality, and the hydrology of the South Fork Wolf Creek within the IMM Project – Brunswick Area, as well as downstream.

An assessment of Impacts 1 and 2 on sensitive biological resources associated with South Fork Wolf Creek is incorporated in previous biological reporting completed for the proposed IMM Project as outlined above (Matuzak, 2020a; Matuzak, 2021a; Matuzak, 2021b). Therefore, this Tech Memo focuses on the evaluation of Impact 3, the potential impacts to aquatic biological resources from the proposed 5.6 cfs of treated mine water discharge to the South Fork Wolf Creek.

Due to private property restrictions, the assessment evaluates two accessible sections of South Fork Wolf Creek, as shown in Figures 2 and 3 in the appendices, including: 1) the full length of South Fork Wolf Creek within Rise's Brunswick Industrial Site and 2) the section of South Fork Wolf Creek within Empire Mine State Historic Park. See attached Photo Log of the assessment area in the appendices.

General Order R5-2016-0076, NPDES No. CAG995002 (Tier 3)

The IMM Project plans to meet waste discharge requirements as set forth in General Order R5-2016-0076, limited threat discharge NPDES No. CAG995002 for Tier 3 Dischargers: Discharges of wastewater from hard rock mines (CRWQCB, 2016). The General Order defines effluent limitations including, but not limited to, the allowable parameters of temperature fluctuations, turbidity changes, pH range, and contaminants, all of which could have an impact on water quality and any sensitive aquatic resources within South Fork Wolf Creek.

Potential discharge and flow impacts to the South Fork Wolf Creek include siltation, turbidity, temperature, pH, and contaminants, which can have a negative effect on aquatic biological resources such as fish, invertebrates, and amphibians if their fluctuations are too high or too low (Clements and Kotalik 2016, Rabeni and Smale 1995, Huff et al. 2017) and therefore, the limited threat discharge NPDES No. CAG995002 for Tier 3 Dischargers sets the ranges in which effluent parameters must be maintained to avoid negative effects on the aquatic ecosystem at a discharge and downstream from a discharge. Therefore, adhering to the Tier 3 Discharge limits in terms of effluent parameters will be required and by doing so will limit any potential negative impacts on any aquatic biological resources associated with South Fork Wolf Creek and its associated riparian habitat zone.

Aquatic Resources and Biological Assessment Survey Methodology for South Fork Wolf Creek

Mr. Matuzak conducted an aquatic habitat assessment of South Fork Wolf Creek as part of the implementation of Visual Encounter Surveys (VES) for the foothill yellow-legged frog (*Rana boylii*) within South Fork Wolf Creek. The VES methodology is based on a California Department of Fish and Wildlife (CDFW) approved protocol following Yarnell et al. (January 2014) for evaluating the abundance, distribution, and habitat associations of foothill yellow-legged frogs within rivers and streams and to provide the necessary data to coordinate other stream reach study efforts, where feasible, such as instream flow studies where hydrodynamic modeling will be used. Given the intensity of the implementation of the VES methodology, it also provides the ability to assess the presence of other aquatic resources within the stream study area and to assess the overall habitat quality of the study stretch in terms of the potential of the stream to provide the necessary habitat structure and streambed substrate for macroinvertebrates, fish, and other aquatic resources.

Furthermore, given that the foothill yellow-legged frog has recently been listed by CDFW as Threatened under the California Endangered Species Act (CESA), the VES methodology is considered the protocol to implement for determining the presence and absence of the species as well as a project's potential to impact the CESA listed species. The habitat (aquatic and upland riparian zone) associated with the South Fork Wolf Creek does not provide suitable habitat for other CESA listed species such as the California black rail (*Laterallus jamaicensis coturiculus*) or the *Scadden Flat checkerbloom (Sidalcea stipularis)*. Additionally, South Fork Wolf Creek does not provide suitable habitat for federally listed species under the federal Endangered Species Act (FESA), including the California red-legged frog (*Rana aurora draytonii*) and Scadden Flat checkerbloom.

Scadden Flat checkerbloom inhabits marshes and swamps and therefore, suitable habitat for this species occurs within the perennial marsh wetlands in the Brunswick Area and not within the aquatic and riparian habitat associated with the South Fork Wolf Creek. California black rail inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays and the California red-legged frog are found in aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons. South Fork Wolf Creek does not provide the pools and backwaters required for the California red-legged frog and it does not provide the marshy habitat required for the California black rail (see Greg Matuzak Environmental Consulting LLC, 2021a for more information related to the potential presence of these aquatic species).

The VES surveys within the South Fork Wolf Creek were conducted on August 29th, 2019 with two surveyors, Greg Matuzak and Lisa McCandless. The VES surveys were conducted beginning from the downstream end of each of the two survey areas within the IMM

Project – Brunswick Area and the Empire Mine State Historic Park. Surveys were conducted from the downstream end of each survey area and were completed at the upstream end of each survey area (see Figure 2 in the attachments for the location of both survey areas). Most of the survey was conducted walking slowly within the perennial creek with waders and evaluating the presence of any aquatic organisms, including habitat structure required for protection and larval attachment. To identify the presence of aquatic organisms, cobbles and rocks were checked by manually feeling around the base of such substrate for egg masses and the stream was surveyed by scanning ahead for approximately 10 meters at a time to search for all life stages of the foothill yellow-legged frog, including eggs, larvae, juveniles, and adults.

The stream was also scanned for the presence of any other aquatic biological resources, including fish, macroinvertebrates, bugs along the surface, and other amphibians and reptiles such as the western pond turtle (*Emys marmorata*), a CDFW species of special concern that associates with perennial water sources given specific habitat criteria. More common fish could include resident rainbow trout (*Oncorhynchus mykiss*). The aquatic habitat and VES surveys were conducted between the highest and lowest points of South Fork Wolf Creek within the IMM Project – Brunswick Area (at the 48" culvert where the perennial creek begins to flow within the Brunswick Industrial Site to the culvert where the perennial creek leaves the Brunswick Industrial Site and flows downstream).

Additionally, a 0.25 mile stretch (~1,300 linear feet) of the South Fork Wolf Creek was surveyed using the VES survey methodology within the Empire Mine State Historic Park, also walking within the stream channel starting at the lowest end and walking upstream towards the highest end of the stream within the Empire Mine State Historic Park.

Based on the VES method surveys of the South Fork Wolf Creek within the IMM Project – Brunswick Area and within Empire Mine State Historic Park, the aquatic habitat values were assessed based on the sediment size, diversity of habitat structure within the stream channel, and the flow conditions of the section of the stream at the time of the survey.

Aquatic Resources Surveys and Biological Assessment Results for South Fork Wolf Creek

The entirety of South Fork Wolf Creek within the IMM Project – Brunswick Area and within Empire Mine State Historic Park contains a well developed riparian zone with a dense overstory of willow (*Salix* sp.) and alders (*Alnus* sp.) and a dense understory of shrubs and plants associated with the banks and top of banks of such streams.

Based on the results of the previous biological reporting for the IMM Project, South Fork Wolf Creek contains suitable habitat for two special-status aquatic species, including the foothill yellow-legged frog and western pond turtle (Matuzak, 2021a). The foothill yellow-legged frog has been previously identified approximately 3.9 miles to the southeast of the Brunswick Area within Greenhorn Creek. However, the species was not identified during focused VES method surveys for this species conducted on August 29, 2019 within

South Fork Wolf Creek within the Brunswick Area or was it identified within the portions of the creek that flow through public property downstream within the Empire Mine State Historic Park. Given the species has not been previously identified within the South Fork Wolf Creek watershed and only marginal suitable habitat occurs within the Brunswick Area for the species, there is a very low likelihood that the foothill yellow-legged frog occurs within the South Fork Wolf Creek (Matuzak, 2021a). The western pond turtle has not been identified within 5 miles of the Brunswick Area however, and it was not identified during field surveys conducted previously within the Brunswick Area, including the VES method surveys conducted within the South Fork Wolf Creek. The potential for the western pond turtle species to occur within the Brunswick Area is however, considered high given the perennial nature of the aquatic resource (Matuzak, 2021a).

Several small fish were identified within the stream (most probably small rainbow trout) as well as several bugs along the surface of the stream, including the common water striders in areas of slow movement within Stretch 2 and Stretch 3 (see attached Figure 2). The Pacific tree frog was identified along the edges of the stream within the Empire Mine State Historic Park (Stretch 3). No foothill yellow-legged frogs were identified at any life stage within South Fork Wolf Creek survey areas. No other amphibians, reptiles, fish, or invertebrates (including benthic macroinvertebrates) were identified as part of the survey. However, specific protocols for surveying and identifying benthic macroinvertebrates was not conducted as part of the survey. No surveys were conducted downstream of the Empire Mine State Historic Park or within Wolf Creek downstream where South Fork Wolf Creek connects with the main stem of Wolf Creek.

Based on the assessment, the perennial creek is divided into the following three sections (stretches) based on the habitat value of the perennial creek within the survey areas (see attached photo log showing each section of the creek as identified here):

- Stretch 1: Stretch of South Fork Wolf Creek located within the Brunswick Industrial Site from the large 48" culvert creating the stream to approximately seven hundred feet (700 ft) downstream from the culvert (approximately 700 ft in length). Stretch 1 does not contain suitable habitat for the foothill yellow-legged frog or for common fish and benthic macroinvertebrate species given the silty nature of the bed of the stream and lack of rocky stream habitat in that area.
- Stretch 2: Stretch of South Fork Wolf Creek located from approximately 700 ft downstream of the 48" culvert to the northwestern boundary of the Brunswick Industrial Site (approximately 2,000 ft in length). Stretch 2 contains marginal suitable habitat for the foothill yellow-legged frog and for common fish and benthic macroinvertebrate species given the bed of the stream along that stretch does contain a mix of rocky and sedimented stream habitat with less fine, silty sediment as identified in Stretch 1. Stretch 2 has a combination of narrow, deeper, and faster moving water as well as wider, shallower, and slower moving water. The

wider, slower moving sections have a wider creek channel and a more developed and diverse riparian zone.

- Stretch 3: Stretch of South Fork Wolf Creek located within the Empire Mine State Historic Park (approximately 1,300 feet in length). Stretch 3 contains the highest value aquatic habitat identified as part of the surveys given the larger sediment size and lack of fine, silty sediments that were identified within the IMM Project – Brunswick Area, especially just below the culvert outfall where the stream daylights within the site. Additionally, Stretch 3 exhibits a lower gradient (average slope of 0.5%) than some of the upper reaches within the IMM Project – Brunswick Area (Balance, 2020). Stetch 3 exhibits pool-riffle morphology, defined by an undulating bed with a sequence of sediment bars, pools, and riffles (as concluded by Balance Hydrologics, Inc. (2020) and from the observations made during the VES surveys within this stretch). However, this stretch of the South Fork Wolf Creek contains marginal suitable habitat for the foothill yellow-legged frog given the sandy nature of the sediment and lack of cobble and rocks for protection and other microhabitat requirements for larval attachment. Habitat quality for common fish within Stretch 3 of South Fork Wolf Creek is considered fair to moderate given the presence of pool-riffle morphology, which fish use for feeding, protection, and spawning. Habitat for benthic macroinvertebrate species is considered marginal given the sandy nature of the sediment and lack of cobble and rocks for protection.

Hydrology Assessment of South Fork Wolf Creek

The Nevada City Engineering, Inc. (2019) Preliminary Drainage Analysis concludes that post project storm-water discharge from the Brunswick Site, including the treated mine water discharge of 5.6 cfs, will be equal to or less than the estimated pre-project storm-water discharge levels. Therefore, with the construction of the storm-water detention ponds, the project will have no impact or increase of flows in creeks during storm events over pre-project storm-water discharge levels (NCE, 2019). This would preclude any potential impacts to the riparian zone located downstream of the discharge point within South Fork Wolf Creek given potential flooding and scouring impacts within the stream channel would be mitigated through the use of the storm-water detention ponds to ensure flows are no higher than estimated pre-project storm-water discharge levels.

Therefore, the only concern for potential biological impacts to South Fork Wolf Creek is during baseflow conditions (ie. outside of storm events).

Geomorphic Assessment of South Fork Wolf Creek

The Balance Hydrologics, Inc. (2020) report evaluates the potential effects and changes from the proposed mine discharge on South Fork Wolf Creek to answer the CEQA

Appendix G applicable question: Will the project "*substantially alter the existing drainage* pattern *of the site or area, including through the alteration of the course of a stream or river, in a manner which would: i) Result in substantial erosion or siltation on or off-site?*".

Erosion and siltation within the South Fork Wolf Creek can have a negative effect on the aquatic biological resources within and directly adjacent to the creek, including fish, amphibians, invertebrates, benthic macroinvertebrates (BMI), and riparian associated plants. For example, siltation and/or erosion related impacts could cause root damage or exposure to riparian zone associated plants which could have an indirect effect on stream shading and the ability of the riparian zone to act as a buffer to erosion related impacts (Rabeni and Smale, 1995). Therefore, the results of the geomorphic assessment, as they relate to the discharge to South Fork Wolf Creek, is an important aspect of this biological assessment of the proposed discharge to the creek and any associated potential impacts to sensitive aquatic resources.

Balance Hydrologics, Inc. completed 4 site visits taking the following measurements: temp, pH, conductance, dissolved oxygen, turbidity, flow, pebble counts, sediment mobility estimation, and direct measurements of sediment mobility. In addition, Balance Hydrologics, Inc. (2020) reporting characterizes South Fork Wolf Creek from the culvert outlet within the Brunswick Industrial Site (at the 48" culvert) to the confluence with the mainstem of Wolf Creek into 6 reaches and identified 2 reaches as the most sensitive and therefore focused their evaluation on these reaches:

1. Reach D: The reach that goes through Empire Mine State Historic Park with an average slope of 0.5%. This reach exhibits pool-riffle morphology, defined by an undulating bed with a sequence of sediment bars, pools, and riffles.

2. Reach E: The reach that goes from Empire Mine State Historic Park to the City of Grass Valley culvert at Ophir Street with an average slope of 1.3%. This reach exhibits pool-riffle morphology and has been highly modified with evidence of fill encroaching on the floodplain. Access was limited in this reach due to private property so they assumed this to be sensitive (similar to the Empire Mine State Historic Park section, to be conservative).

Measured base flows of the perennial creek range from 0.17 cfs (summer) to 6.5 cfs (winter). One site visit occurred during a January storm event, which measured 11cfs at the proposed discharge location within the IMM Project – Brunswick Area and 17.3 cfs at the Ophir Street culvert. These flows occurred without any sign of flooding or overbanking the creek (Balance, 2020).

Based on grain distribution analysis for 3 Wobble Pebble Counts conducted in Reach D, the median sediment size (D50) ranges between 28mm – 63mm – classified as gravel. The Shields Parameter estimation for the smallest D50 measured, 28mm and suggests that

sediment mobility is initiated in streamflow between 20-90 cfs (Reach D). As this range is large, Balance conducted direct sediment mobility measurements during the January storm event. Sampling found no evidence of bedload transport at this streamflow (17.3 cfs) which supports the low end of the sediment mobility estimate (Balance, 2020).

In December 2019, Balance completed a site visit after a larger rain event which they estimated to be 23 cfs using indirect measurements. Balance states that they observed limited sediment deposits in some pools after the December flow event. Therefore, the low end of sediment mobility is concluded to be between 17.3 cfs and 23 cfs. Most of the sediment deposits from the December flow event were characterized as fine sand and gravel with minimal or no bank erosion, bed scour, or channel avulsion. Balance concludes that the threshold for causation of substantial erosion or sedimentation, as per CEQA, is greater than 23 cfs. Additional work is required to establish what flow and associated sediment transport rates are required to do significant work on the channel; however, this flow is higher than 23 cfs (Balance, 2020).

In addition, Balance concludes that flows in South Fork Wolf Creek, with the additional discharge of 5.6 cfs, will be below 23 cfs during summer and winter baseflows. Consequently, the IMM Project discharges during baseflow periods will not result in substantial erosion or siltation on site or offsite (Balance, 2020). Therefore, based on the conclusion of Balance, potential downstream impacts to the stream channel and associated riparian zone along both sides of South Fork Wolf Creek from the additional discharge of 5.6 cfs would be minimal on such sensitive biological resources and do not represent a potential significant impact to the stream channel or associated riparian zone within South Fork Wolf Creek.

Water Treatment Plant Design

The Linkan Engineering (2019) design for water treatment utilizes NPDES No. CAG995002 discharge standards for treatment of mine water. Water samples were taken from the Brunswick Shaft. Iron and manganese are the constituents of concern. A water treatment plant using conventional methods has been designed and is effective at achieving the NPDES No. CAG995002 waste discharge standards (Linkan, 2019).

Therefore, based on the conclusion of Linkan Engineering and the design of a water treatment plant to mitigate for both iron and manganese levels within the proposed discharge to South Fork Wolf Creek, effluent discharge limits for both constituents of concern will meet the requirements set by NPDES No. CAG995002 for Tier 3 Dischargers: Discharges of wastewater from hard rock mines (CRWQCB, 2016). Therefore, the potential impacts to BMI and other sensitive biological resources from constituents of concern, including iron and manganese, would not represent a potential significant impact to sensitive biological resources or the food web within South Fork Wolf Creek and downstream within the main stem of Wolf Creek given the development of a treatment

plant will mitigate the discharge of constituents of concern such as iron and manganese. No other constituents of concern have been identified as part of the proposed discharge to the South Fork Wolf Creek (Linkan, 2019).

Aquatic Resources Impact Assessment from Discharges to South Fork Work Creek

The proposed IMM Project will discharge a maximum of 5.6 cfs of treated mine water to South Fork Wolf Creek and such discharges will be in compliance with the waste discharge requirements of General Order R5-2016-0076, NPDES No. CAG995002 for Tier 3 Dischargers: Discharges of wastewater from hard rock mines.

Due to the design and implementation of the storm-water detention ponds, the IMM Project will have no impact or increase of flows in creeks during storm events (NCE, 2019). Therefore, the only concern for potential biological impacts to South Fork Wolf Creek is during baseflow conditions (ie. outside of storm events). Furthermore, Balance (2020) has determined that 23 cfs is the threshold for bedload sediment mobility and well below flows that commonly exhibit significant work on the channel. Additional work would be required to establish what flow and associated sediment transport rates are required to do significant work on the channel, although this is higher than 23 cfs.

Estimated flows within South Fork Wolf Creek during summer and winter baseflow, including the 5.6 cfs discharge, are less than 23 cfs (Balance, 2020). Keeping within the proposed IMM Project discharge of 5.6 cfs will ensure that potential negative impacts to the aquatic resources (BMI and any other sensitive biological resources) within the stream channel from potential bank erosion, bed scour, and channel avulsion would not be substantial and therefore, negative impacts to aquatic resources from excess siltation and turbidity caused by the proposed discharge would not occur due to such creek channel impacts, including any potential impacts to the riparian zone of South Fork Wolf Creek.

As part of the NPDES coverage through the Central Valley Regional Water Quality Control Board General Order R5-2016-0076 (NPDES No. CAG995002), regular monitoring will be required and Rise will be required to meet the discharge requirements as detailed in the NPDES permit.

Several NPDES regulated parameters have the potential to affect aquatic resources and sensitive aquatic habitat if those parameters are found to be outside the safe threshold limits identified within the NPDES discharge requirements. The NPDES parameters will be regularly monitored to ensure compliance with the NPDES discharge requirements. This will ensure that State of California water quality standards are met as part of the proposed discharge and to ensure that impacts to BMI and the food web within South Fork Wolf Creek and downstream further within the main stem of Wolf Creek will be less than significant.

The water quality parameters that have the greatest potential to affect the aquatic ecosystem and sensitive aquatic biological resources include, but are not limited to the following:

- Temperature – the natural temperature cannot be increased by more than 5 degrees Fahrenheit,
- pH – must remain between 6.5 and 8.5 for the Sacramento River Basin,
- turbidity – monitoring requirements and turbidity levels specified within NPDES permit, and
- dissolved oxygen – monitoring requirements and dissolved oxygen levels specified within NPDES permit.

The discharge requirements also typically include water quality standards for constituents and parameters of concern, which have potential to have a negative effect on aquatic resources within South Fork Wolf Creek. Rise is working with an engineering firm, Linkan Engineering, regarding the treatment of the mine water that will be discharged to SF Wolf Creek. Linkan Engineering has designed a water treatment plant that will be effective in complying with the NPDES discharge requirements (Linkan, 2019) and thus mitigating for any potential significant impact on BMI and the food web associated with South Fork Wolf Creek and downstream within the main stem of Wolf Creek.

The water quality requirements of the NPDES permit requirements will be monitored and adhered to as part of the proposed discharge to South Fork Wolf Creek.

Conclusion

Remaining within the proposed 5.6 cfs discharge limit and in compliance with the NPDES discharge requirements will ensure that the proposed discharge to South Fork Wolf Creek will not have an adverse effect on South Fork Wolf Creek aquatic ecosystem and any sensitive aquatic biological resources, including to BMI and the food web. Under these conditions, potential bank erosion, bed scour, and channel avulsion would not be substantial and water quality standards for constituents and parameters of concern would remain in compliance. Therefore, negative impacts to aquatic resources from excess siltation and turbidity, as well as from the exceeding safe threshold limits caused by the proposed discharge, would be avoided and minimized from the implementation of the proposed discharge to the South Fork Wolf Creek.

The stretch of South Fork Wolf Creek from the discharge point to the City of Grass Valley Ophir Street culvert exhibits a functioning aquatic ecosystem as several small fish were identified within the stream, several invertebrates were identified along the surface of the stream, and Pacific tree frogs were identified along the edges of the stream within

riparian zone vegetation. However, the stream stretches assessed in this analysis only contain marginal suitable habitat for special-status aquatic species, such as the foothill yellow-legged frog and the western pond turtle, and it is very unlikely that such species would inhabit the stretches of South Fork Wolf Creek covered under this assessment. South Fork Wolf Creek does not contain suitable habitat for any other CESA or FESA listed species or any other sensitive biological resources as defined by CDFW (see Greg Matuzak Environmental Consulting LLC, 2021a for additional information regarding sensitive biological resources within the Brunswick Area). Therefore, remaining in compliance with NPDES permit regulated discharge requirements and incorporation of the project stormwater design by NCE (2019) will ensure that the South Fork Wolf Creek will not be adversely affected by the discharge to the creek and its associated aquatic biological resources.

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Matuzak, Greg. 2021b. Brunswick Industrial Site and East Bennett Road Right of Way (ROW) Watercourse/Wetlands/Riparian Areas Management Plan (Greg Matuzak Environmental Consulting LLC).

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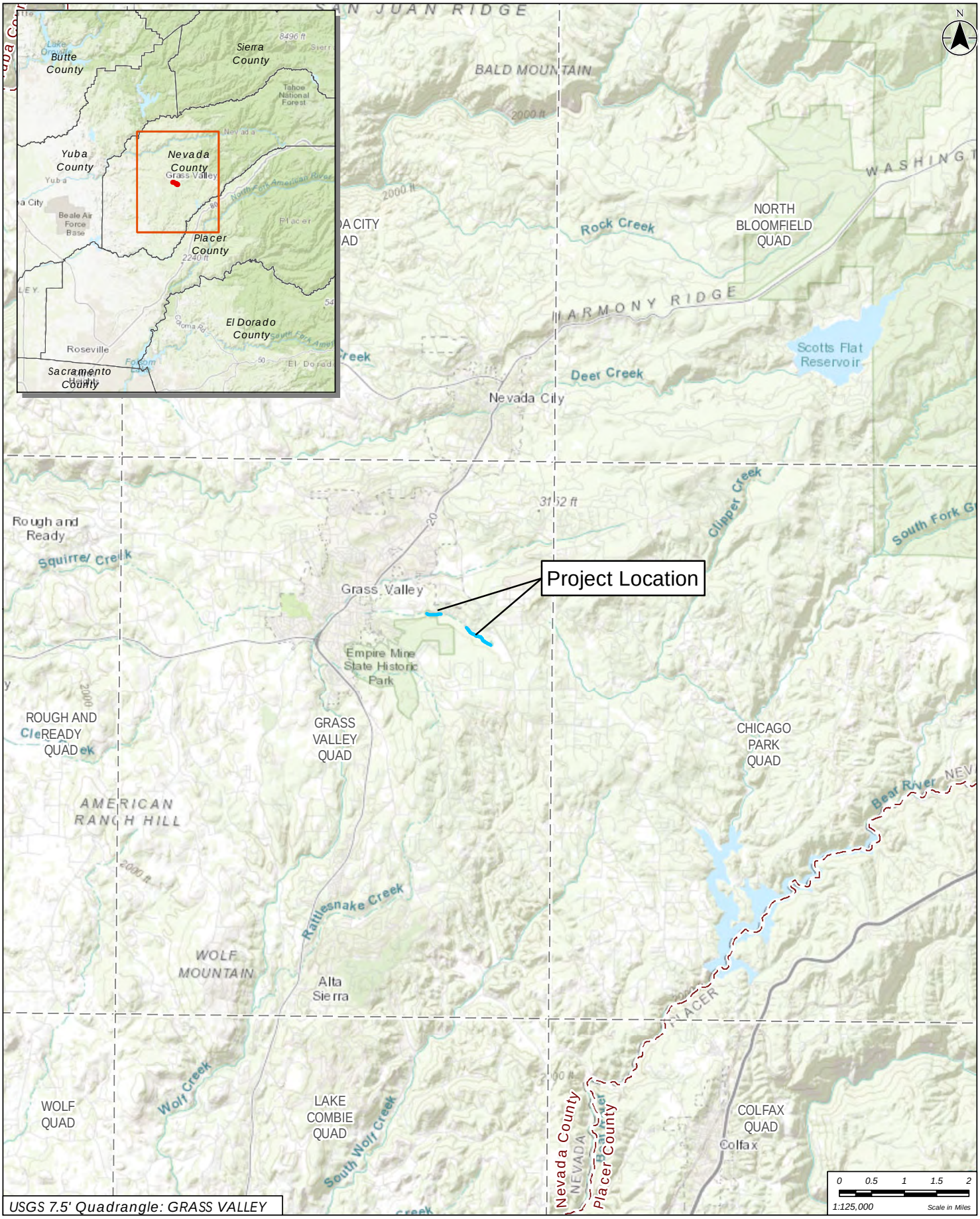
Appendices



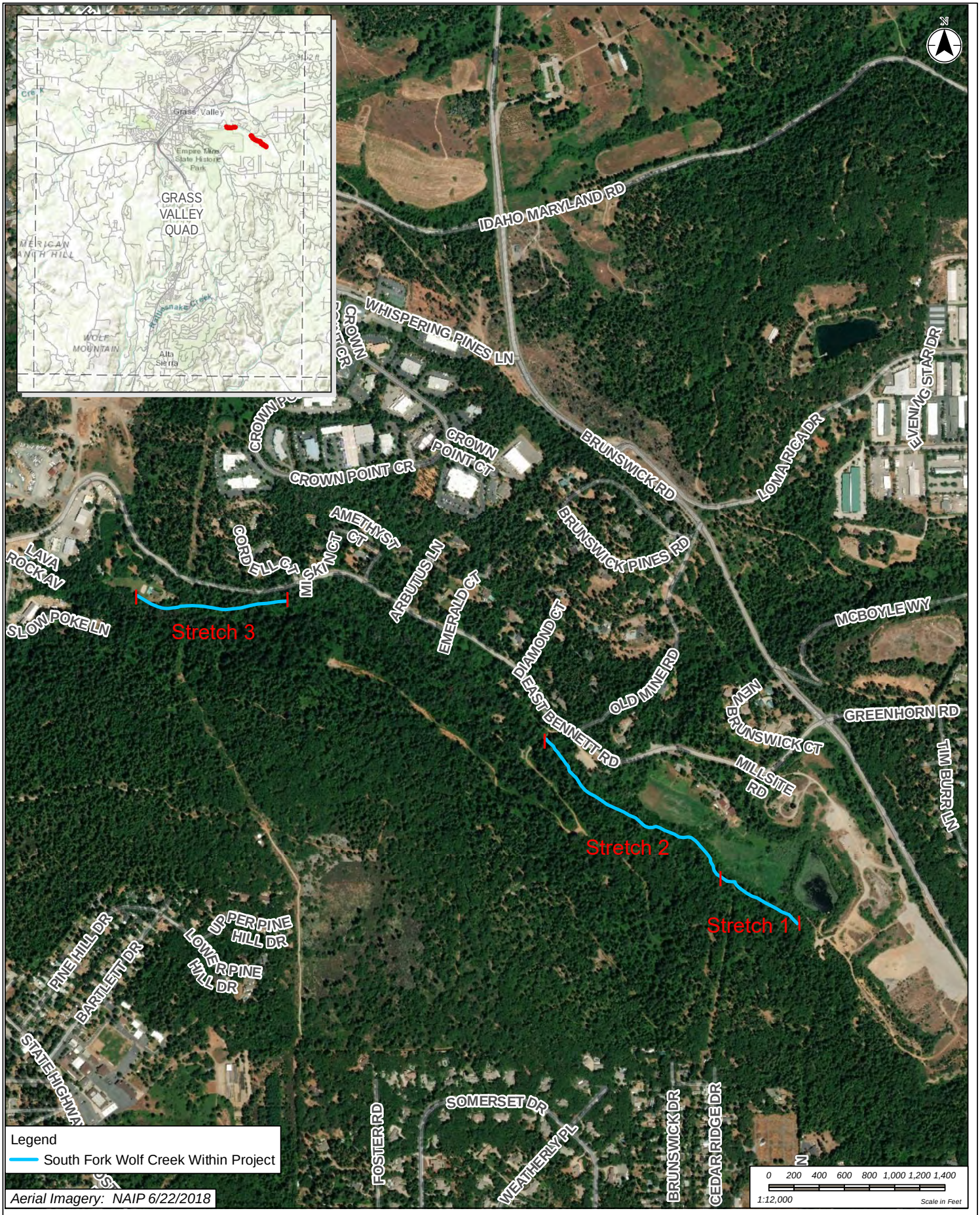
USGS 7.5' Quadrangle: GRASS VALLEY

GREG MATUZAK
Environmental Consulting LLC
Nevada City, CA

South Fork Wolf Creek

Figure 1. Vicinity Map

Prepared: Melissa Nugent 12/10/2019 C:_Matuzak\20191208_NevadaCnty_WolfCreek\mxd\Fig1_Vicinity_NevadaCounty_WolfCreek.mxd

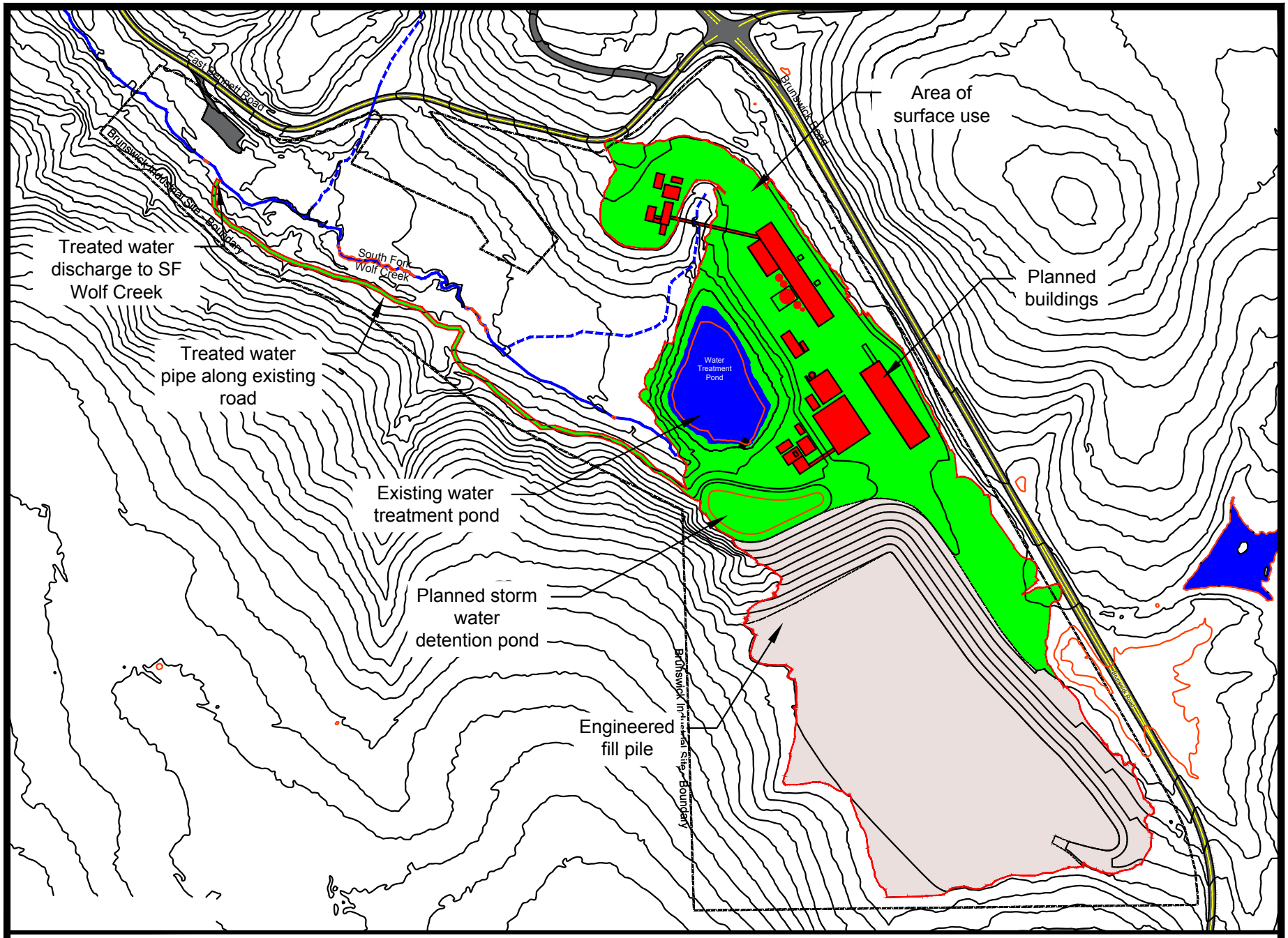


GREG MATUZAK
Environmental Consulting LLC
Nevada City, CA

South Fork Wolf Creek

Figure 2. Project Results Map

Prepared: Melissa Nugent 12/10/2019 C:_Matuzak\20191208_NevadaCnty_WolfCreek\mxd\Fig2_SiteMap_NevadaCounty_WolfCreek.mxd



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

SCALE 1"=500'
500 ft

Brunswick Industrial Site

Site Plan

Showing final topography
Elevation contours at 10 ft intervals

Photos of the South Fork Wolf Creek in the Project Area and Empire State Mine

Photo 1: South Fork Wolf Creek begins at culvert within the Brunswick Area (Stretch 1).

Photo 2: South Fork Wolf Creek begins at culvert within the Brunswick Area (Stretch 1).

Photo 3: South Fork of Wolf Creek directly downstream of culvert outlet (Stretch 1).

Photo 4: South Fork of Wolf Creek downstream of Photo 3. Channel is incised, deep, and contains sediment along the stream bed with few rocks and boulders. Stream habitat along this stretch is very marginal for amphibians given depth and sediment (Stretch 1).

Photo 5: South Fork of Wolf Creek channel is incised, deep, and contains sediment along the stream bed with few rocks and boulders. Stream habitat along this stretch is very marginal for amphibians given depth and sediment (downstream end Stretch 1).

Photo 6: South Fork of Wolf Creek downstream of Photo 5. Channel is wider, shallower, and contains rocks and small boulders. Stream habitat for amphibians along this stretch is better given less sediment, wider channel, and rocks (Stretch 2).

Photo 7: South Fork of Wolf Creek downstream of Photo 6. Stream habitat for amphibians along this stretch is considered similar to Photo 6 (Stretch 2).

Photo 8: South Fork of Wolf Creek downstream of Photo 7. Channel is wider in this photo than the previous stretches of the stream. Stream habitat for amphibians along this stretch is considered higher value than previous photos (Stretch 2).

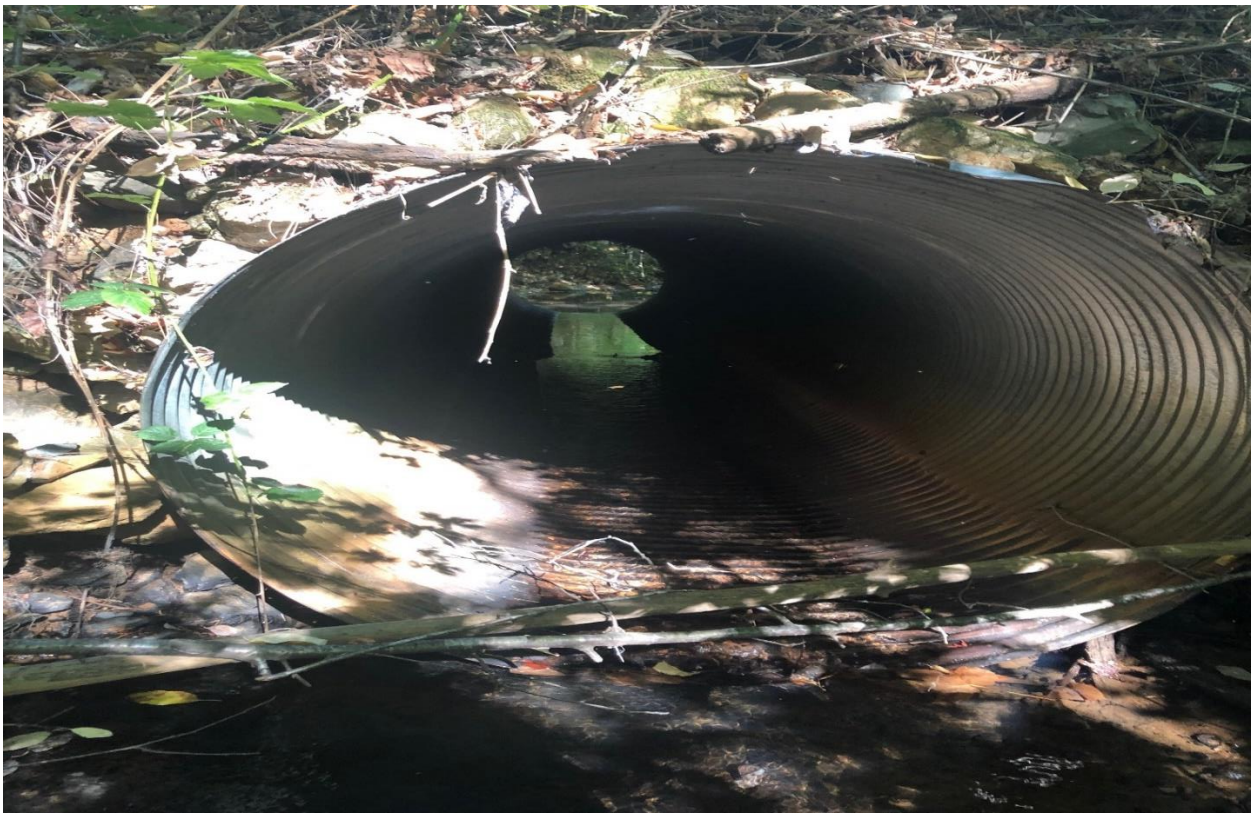


Photo 9: South Fork of Wolf Creek leaving the Brunswick Area through a culvert. Private property is located directly downstream of this culvert (downstream end of Stretch 2).

Photo 10: South Fork of Wolf Creek downstream of the Brunswick Area within Empire State Mine, located along the southern side of East Bennett Street (Stretch 3).

Photo 11: South Fork of Wolf Creek downstream of the Brunswick Area within Empire State Mine, located along the southern side of East Bennett Street (Stretch 3).

Photo 12: South Fork of Wolf Creek downstream of the Brunswick Area within Empire State Mine, located along the southern side of East Bennett Street (Stretch 3).