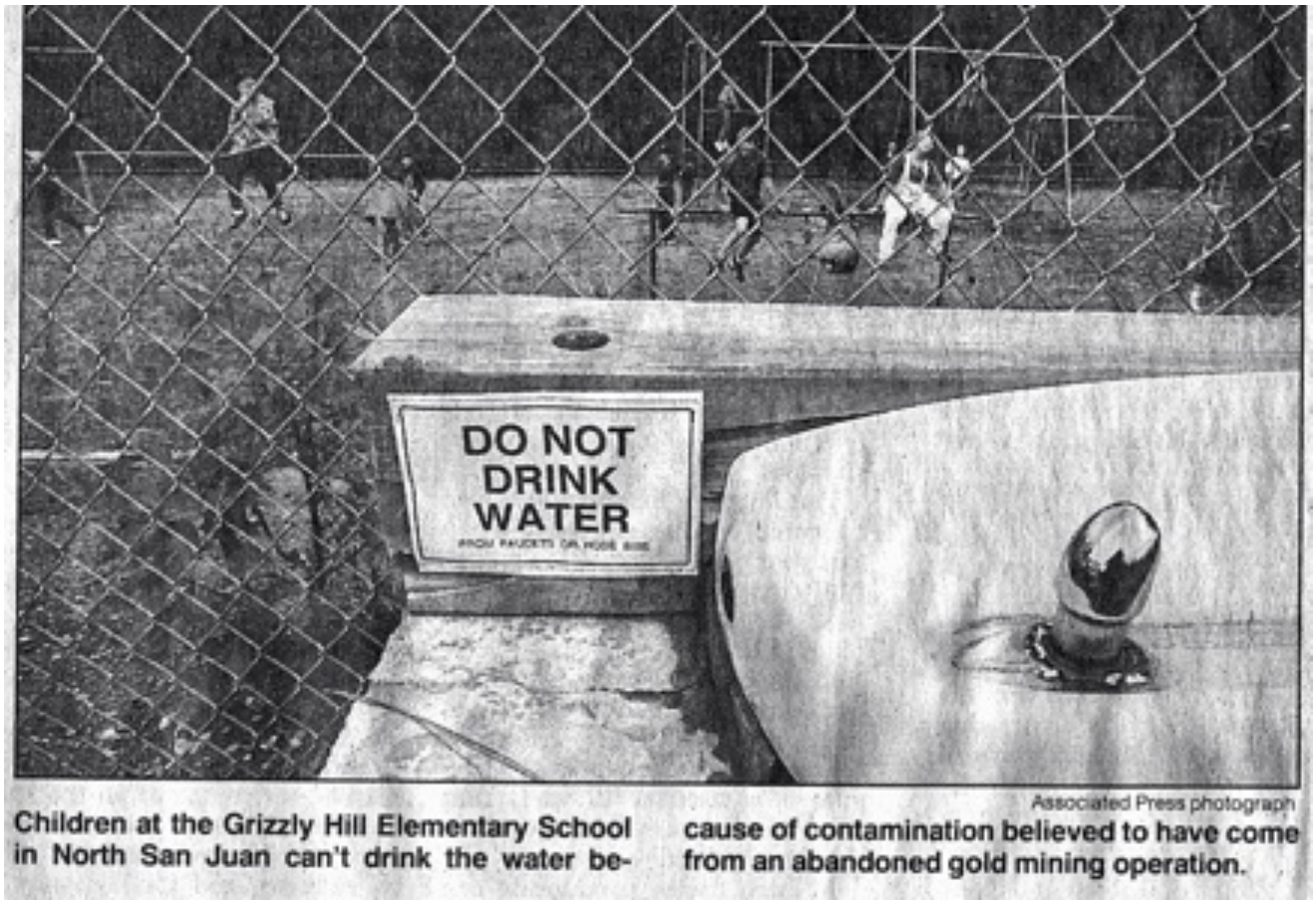
COMMENTS OF
THE SAN JUAN RIDGE TAXPAYERS ASSOCIATION
ON THE PROPOSED SAN JUAN RIDGE MINE

Submitted to the Nevada County Planning Department
December 4, 2012



Associated Press photograph

Children at the Grizzly Hill Elementary School in North San Juan can't drink the water because of contamination believed to have come from an abandoned gold mining operation.

Sacramento Bee, December 31, 1997.

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I. Executive Summary

On November 9, 2012, the Nevada County Planning Department issued a Notice of Preparation of an Environmental Impact Report (EIR) for the proposed re-opening of the San Juan Ridge Mine. These are the scoping comments of the San Juan Ridge Taxpayers Association (SJRTA).

SJRTA believes that some of the potentially significant impacts of the mine may not be able to be mitigated. Further, there could be and have been numerous potentially significant impacts on water quality, quantity, on wetlands and streams, as well as on our economy and infrastructure. The NOP identified many of these significant impacts including impacts to water supply. These comments contain information that may be helpful in assessing the extent of these impacts.

There are several areas in which the NOP seems to indicate that there will be no significant impacts. SJRTA believes that, to the contrary, some of these impacts may indeed be significant. Namely, forestry and agriculture, recreation, and public services may be significantly affected by dewatering and dangers associated with the mine.

Discussion of potential impacts to forestry and agriculture are contained in relevant sections below, the primary risk being the risk of dewatering of wells and water tables that supply water to forests and farms. Potential impacts to public services include possible impacts to the North San Juan Volunteer Fire Department Station 2 water supply, possible damage to the water supply for the California Department of Forestry and Fire Protection (CDF) North Columbia substation, and possible damage to the well providing water for the area's only medical clinic, the Sierra Family Medical Clinic. Possible significant impacts to recreation exist because the mine site is located so close to public lands that are heavily utilized for OHV use, recreational mining, hiking and naturalism, and thus a major industrial operation nearby will radically alter recreation experience. Further, the location of dozens of vent holes on the mine property poses a risk to hikers who may wander off of public lands. These potentially significant impacts must be assessed in an EIR. Further, the mine may be inconsistent with the General Plan and other State and Federal laws.

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This mine devastated water supplies when it was last open. The proposed mine would pump up to 3.5 million gallons of water per day, if the aquifer is not accidentally tapped, a quantity that is approximately 30% of all of the water removed from the ground in Nevada County for domestic water supplies in one day.

The mine is in the heart of a productive rural community that depends on well water as its primary water supply, and a natural environment that includes water-dependent wetlands and riparian ecosystems. Based on the past effects of the mining operation, damage to water supplies is likely, and the location of the project means that impacts would affect many people and the natural environment. These potentially significant negative environmental impacts must be addressed in the EIR. A summary of these effects is provided below.

A. The proposed mine may have significant impacts on the environment and human beings that probably cannot be mitigated, and must be disclosed under CEQA.

The planned mine is likely to cause negative impacts to water quantity in local wells, wetlands, and streams. The amount of water to be extracted at the peak of this operation (up to 3.5 million gallons per day) exceeds the documented amount pumped due to the dewatering event that occurred in 1995. Even with no catastrophic event, water supply will certainly be affected. Most of the affected parcels have no other water source; this impact cannot be mitigated.

Impacts to water quality are likely to result from the planned mine. When pumping ceased in 1997, water contamination to local wells occurred that has yet to be completely mitigated, 15 years later.

B. Other potentially significant impacts must be assessed in an EIR, under CEQA.

- **Air quality impacts** ¼ mile from a public school may harm children's health.
- **Transportation of toxic and hazardous materials within ¼ mile of a public school** and through major communities places children and others at risk. This impact requires a mandatory finding of significance under CEQA.
- **Noise impacts** in our very quiet neighborhood, and near the North Columbia Schoolhouse Cultural Center (an outdoor performance venue and community center) may be significant.
- **Significant negative impacts to rare, threatened and endangered species** must be assessed, including possible effects to threatened California red-legged frog, State listed migratory birds, and State listed amphibian species, as well as other very rare species. In one case, this project may impact one of 3 known occurrences in California of a rare plant (inundated bog club-moss). Some of these impacts require a mandatory finding of significance.
- **Dewatering could harm local vegetation**, and have significant hydrologic impacts on upland, wetland and riparian habitat in and near the project site.
- **Dewatering of streams and discharge of mine effluent and other run-off into tributaries of the South Yuba River** including Spring Creek and Shady Creek, and possibly the Middle Yuba's Grizzly Creek watershed, may cause significant harm to these ecosystems.
- **The instability of the mine tunnel** and underground air pollution risks the health and safety of mine workers.
- **Mercury** from abandoned hydraulic mine sites must be identified. High quality archeological evaluation and other analyses are needed to avoid mercury displacement.
- **Contamination of water** by release of hazardous underground contaminants could have negative impacts on public health.
- **Impacts to recreation and nearby public lands** could be significant.
- **Impacts on our local businesses and property values** could be devastating to our local economy. More than 200 local jobs depend on wells that are within a mile or less of the proposed mine tunnel.

C. The proposed mine would contribute to cumulative impacts that may be significant, and that must be evaluated in an EIR.

- The proposed mine could increase **greenhouse gas emissions** in a manner that may have cumulatively significant impacts. Emissions would be produced by the use of 500,000 gallons of diesel fuel and by use of large quantities of Portland cement.
- **Cumulative impacts to migratory birds,** including sandhill crane and willow flycatcher, must be assessed in an EIR.
- **Increased risk of wildfire** due to effects to vegetation and increased risk of ignition is a potential significant cumulative impact.
- **Increased proliferation of invasive species** has the potential to cause significant cumulative degradation to the environment, which should be addressed in an EIR.
- The cumulative increase in **light pollution** should be evaluated in the EIR.

D. The proposed project may violate other local, state and federal laws:

- T**he proposed project may be inconsistent with the Nevada County General Plan.** By allowing inconsistent uses to be permitted next to each other, the proposed mine contradicts explicit direction of the General Plan. Further, by proceeding without required planning and mitigation, the negative impacts and inconsistency with plan direction are overlooked.
- **The Clean Water Act requires a wetlands delineation and a Section 404 (d) permit**.
- The project may **contaminate watersheds that have been listed as Impaired,** in violation of the Clean Water Act.
- The applicant and Nevada County must obtain a **take permit under the Endangered Species Act if there is the potential take of an endangered species**, as there is potentially suitable habitat for the California red-legged frog within affected creeks; state permits are needed for potential take of California ESA Listed species.
- Potential impacts to migratory birds, including the sandhill crane and willow flycatcher, could violate the California Endangered Species Act and Migratory Bird Treaty Act.
- Impacts to drinking water may be unlawful under the Porter-Cologne Act.

In summary, the proposed mine re-opening threatens a host of potentially significant impacts to human beings and the natural environment. These impacts must be assessed in the EIR. In addition, some of these impacts may not be able to be mitigated. For example, despite best efforts to mitigate impacts to water quality, the last mining efforts left the local public school with the costly burden of contaminated water, long after the bond money was depleted. Finally, some of the potentially significant impacts may violate state, federal, or local laws.

II. Background

The proposed re-opening of the San Juan Ridge Mine occurs in the context of the effects of the initial operation of the mine between 1994 and 1997. Understanding this past is important to an accurate analysis of cumulative impacts of the proposed mining, to the development of accurate baseline information against which to compare changes, and is also important to an understanding of the cumulative impacts on our local community.

While the community surrounding the proposed San Juan Ridge Mine was originally concerned about impacts of the mine, the San Juan Ridge Taxpayers Association (SJRTA) and others soon came to believe that the major impacts of the mine could be mitigated. The EIR for the proposed mine asserted that waters in the gravels and bedrock were not likely connected, and thus that nearby wells probably would not be affected.[1] The EIR predicted that at most, water levels in three nearby wells might be reduced by 9 inches. In January of 1993 the Environmental Impact Report for the proposed mine was approved and certified.[2]

The SJRTA was concerned that the EIR had underestimated possible effects, and worked with Siskon Gold and Nevada County to negotiate a Remedial Water Supply Plan as a mitigation measure attached to the Conditional Use Permit. With this mitigation and numerous other mitigations, SJRTA agreed not to challenge the proposed mine. Nevada County approved the mine, and the mine began to operate in 1994.

Unfortunately, the conclusions of the EIR, Nevada County, and the SJRTA were incorrect, and the mine caused significant impacts to water quantity and quality throughout and following the period of mine operation. Impacts of the mine have yet to be fully mitigated, most notable being ongoing impacts to the water supply for the nearby Grizzly Hill School. A detailed account of the timeline and severity of past and ongoing impacts follows.

The mine had negative effects on quantity and quality of water supplies very soon after operations began, well before the dramatic dewatering event of 1995 and even in a year with above-average precipitation. In October 1994, the local school district contacted Nevada County about problems with their water supply. Water quantity and quality were declining. Communication between the Twin Ridges Elementary School District and Nevada County is documented in at least six different letters.[3] In addition, at least one well failed prior to the dewatering event.[4]

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[1] *Environmental Impact Report for the Siskon Mine*, Westec (1993).
[2] *Id.* at 5-7.
[3] *See* Letters of 10/25/94, 11/8/94, 12/16/94, 12/21/94, 5/26/95, 6/1/95 Twin Ridges Elementary School district to and from Tod Herman of the Planning Dept.
[4] Luhdorff and Scalmanini, *Hydrologic Study of Ground-Water Impacts from Mine Dewatering at the San Juan Ridge Mine* (1996), at 47, 53.

Far greater damage to water supply ensued when the mine tunnel hit a water-bearing fault in 1995 (now identified as fault F6), causing massive dewatering to critical wells in the surrounding community. In late September of 1995, this incident drained a large portion of the aquifer that underlies North Columbia and properties to the north. The mine flooded and operations stopped. Wells up to almost 2 miles from the mine tunnel in North Columbia were affected within days of this event, and were dewatered within a week.

The well at Grizzly Hill School failed and water had to be trucked to the site for school to continue. The main community hall, located in a historic schoolhouse, also lost its well.

The mine owners attempted to mitigate impacts to the well for the Grizzly Hill School. First, the mine arranged to have water trucked to the school site. The mine drilled a new school well to a depth of 450', but the water proved to be high in minerals and radically exceeded legal drinking water standards for some substances.

In February 1996, the mine was still trucking water to the school, five months after the incident. By April 1996, the school was using the new well water but still was not permitted to use the water for drinking. Bottled water had to be transported to the school for the drinking water supply until 2008, long after the bond funds posted by Siskon had run out in 2002.

At the same time that the school well failed, the North Columbia School House Cultural Center well also failed, and over the next few weeks a string of domestic wells failed to the north of the North Columbia historic town site. A total of 11 wells were dewatered to the extent that they had to be replaced or drilled deeper, and 4 other wells were impaired.[5] The mine company contracted for new wells to be drilled to replace the failed wells, and also worked to dewater the mine itself with new, high volume pumps. The North Columbia Schoolhouse Cultural Center stopped using well water for its water supply.

Dewatering of wells was a problem for surface users, but underground the water inundating the mine had to be removed for mine operation to continue. Disposal of this water became a significant problem, as settling ponds were not designed to contain this quantity of water. Water began to be discharged into local streams. This significant rate of dewatering went on for 4 months and eventually discharge from the F6 fault was successfully plugged with concrete.[6]

For those four months, the water discharge increased from about 200,000 gallons per day (gpd) to 2 million gpd, and is likely to have been much higher during the first days of discharge.[7] The amount of water that the Regional State Water Quality Control Board temporarily permitted Siskon to discharge far exceeded that in the original permits, though the mine had been unable to consistently meet WDR requirements in permits even

[5] Luhdorff and Scalmanini, *Hydrologic Study of Ground-Water Impacts from Mine Dewatering at the San Juan Ridge Mine* (1996), at 47.
[6] *Id. at* 2.
[7] *Pers. comm.* with Kurt Lorenz, who witnessed high volume, unmeasured discharges.

prior to this discharge.[8] These flows were released initially in September, when riparian associated species rely on low flows.

Unfortunately, a lack of baseline data and lack of detailed monitoring resulted in little information being gathered regarding the effects of this discharge on riparian and aquatic ecosystems. No data was gathered concerning potential impacts of this discharge on the rare populations of foothill yellow-legged frogs that inhabit this creek.[9] During November 1996, the Regional Water Quality Control Board fined Siskon and amended the discharge permit to allow a 30-day average discharge of up to three million gpd.

This dewatering incident resulted in a requirement by Nevada County that Siskon fund a hydrological study to be conducted by consultants Luhdorff and Scalmanini. Published in June of 1996, this study predicted that even with no further catastrophic dewatering events, 2.53 million to 3.53 million GPD would be discharged from the mine as the tunnel progressed to the west works.[10]

Before the westward expansion could begin, the tunneling encountered unstable ground. Over a weekend in March of 1997, the floor of the tunnel rose toward the ceiling.[11] As a result, the new section of tunnel had to be abandoned. The price of gold was low and the cost of mining was increasing. The 1995 stock price had hovered around $12. By spring of 1997, the same shares were worth less than ten cents each. In May of 1997, Siskon closed the mine and sealed the decline tunnel with a concrete wall, or "plug."

For the community surrounding the mine, water and health issues were just beginning. When the mine ceased its removal of water from the tunnel, wells began to suffer from water quality problems. Luhdorff and Scalmanini found that "…water quality changes have occurred as a result of mining operations," but at the time of the 1996 study, levels of most contaminants did not exceed water quality standards.[12] However, by September and October of 1997 Nevada County's well testing revealed water from the school well that contained 133 times allowable iron, manganese 163 times over the limit, aluminum 5.5 times beyond that permitted, nickel 7 times, and zinc 4 times the allowable level.[13]

Because levels of contamination were extreme, Nevada County Health Department issued a "No-Drink" order to the school in September of 1997. To supply drinking water to the school, deliveries of bottled water costing $300+/month were required. The mitigation bond funds ran out in 2002, and the school district assumed financial responsibility for addressing impacts to the well. The school continued to utilize bottled water as its only drinking water for a total of 13 years, until 2008 when water quality

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[8] *Id.* at 36,

[9] *See Final Report: Environmental Analysis of Increased Discharge of Groundwater from San Juan Ridge Mine to Spring and Shady Creeks,* Jones & Stokes Associates, Inc. (1996) (providing analysis of impacts, but not to Foothill yellow-legged frogs).

[10] Luhdorff and Scalmanini, *Hydrologic Study of Ground-Water Impacts from Mine Dewatering at the San Juan Ridge Mine* (1996), at 66-68.

[11] The Union newspaper, *Economic and Physical Woes Rumble Under Siskon,* May 5, 1997.

[12] Luhdorff and Scalmanini, at 73.

[13] *See* Nevada County Department of Public Health, *Letter of October (1997).*

improved enough that the school could finally purchase a filtration system that enables the water to meet drinking water standards.

The school is still paying for this filtration and treatment, and students still complain that the water from the drinking water fountains tastes bad. To date, the school district has spent approximately $150,000 since the bond money ran out, and continues to spend more than $8000 a year to fix the water problems. Importantly, the water is still contaminated and may never be restored to the safe, potable water delivered from the school's drinking fountains before the mine opened.

Finally, many of the property owners whose wells were affected during the mining and directly following the cease of the mine operation report continued well damage. Several individuals have experienced health problems that their doctors report is associated with drinking water contaminated by the mining operation. In addition, several well owners indicate that their wells still pump much lower rates of water than before the mine went in, and that there was a significant drop in well production at that time from which their wells never recovered.

In sum, despite conclusions of the 1993 EIR that there would be no significant impacts to water quantity or quality, and despite Siskon's efforts to mitigate impacts once they occurred, impacts on local water quantity and quality were severe and ultimately have not been mitigated by the mine owner, almost 20 years after the mine opened.

These ongoing and past impacts need to be understood by Nevada County prior to approval of new mining activities. In addition, little analysis of these unanticipated and dramatic impacts on natural resources was ever conducted. Dewatering of water sources available to wildlife and vegetation may also have occurred, but little analysis of impacts to aquatic and riparian ecosystems or to wetlands was performed and what analysis was completed lacked development of baseline data or detailed stream surveys. Thus, analysis would not have been likely to identify changes. Finally, the original EIR failed to identify all plants and animals that might be affected by the mine, and thus there was not an opportunity to predict, mitigate, and monitor effects to some of the rare species found on or adjacent to the project area.

In developing the EIR required to re-open the San Juan Ridge Mine, these significant errors must be remedied. The EIR for the proposed re-opening must accurately assess reasonably foreseeable significant impacts. The EIR must be based on analytical tools that are sufficiently robust to predict possible significant effects. If such tools are not available, the EIR must address areas where information is not available. The EIR must disclose potential significant impacts, and must provide mitigations for these impacts, as well as analysis of whether mitigations are likely to succeed and to be sufficient. Nevada County must not be required to rely on inadequate analysis in making this significant decision regarding the fate of our community's water supply. Finally, if there is a possibility that this mine may cause impacts to water quality and quantity that may not be able to be fully mitigated, this information must be disclosed to our community.

III. Our local environment

A. Social Environment

The proposed San Juan Ridge Mine is located in the heart of a thriving rural community. In California, there has never been a time since 1850 where more than 50% of the State's population was born here. By contrast, there are numerous families on the San Juan Ridge for whom three or even four generations live as part of this community. Many property owners have owned their land for 30 years or more. If the mine caused a major dewatering event, the people who form this community would not have a water supply, and that could radically alter what until now has been a remarkably stable community.

The residents within the three-mile radius of the mine are diverse demographically, with a variety of income levels, educational backgrounds, political affinities, and social values. At the heart of this community, across political and social lines, are a deeply held values of the land around us and a rural pace of life. Residents have been willing to give up more convenience and better-paying jobs to be able to live here, and are thus particularly committed to remaining in this community.

This commitment to place and community is evident in our institutions. For example, the San Juan Ridge is home to the North San Juan Volunteer Fire Department, which just celebrated its 150th anniversary. The department provides emergency services locally, but also is trained to perform swift water rescue in our local rivers, as well as sending fire crews to fires around the State. It is a volunteer fire department, a rare institution in California today.

Another local institution, the North Columbia Schoolhouse Cultural Center, is located less than ¼ mile from the proposed mine, and lost a well during the past period of operation. Built in 1875, the historic Schoolhouse now serves as a community center for the residents of the San Juan Ridge, providing cultural, educational and entertainment programs and performances. Events such as the Sierra Storytelling Festival host up to 500 people and attract a nation-wide audience. When local Pulitzer Prize-winning poet Gary Snyder released his epic poem, *Mountains and Rivers Without End*,[14] he performed it here to a musical score as a unique, 6-hour event, held out of doors to facilitate the stargazing that he saw as part of the performance. It is evident the impacts of noise, dust, and traffic that would be caused by the proposed mine would have a particularly significant effect on this kind of programming.

Another institution is the Grizzly Hill School, also within ¼ mile of the proposed mine. This school is a K-8th public school, the only public school on the San Juan Ridge that services this age group. The school has traditionally incorporated environmental education into its curriculum, utilizing the school property and adjacent Bureau of Land Management lands as its classroom. A second elementary school within one mile from the proposed mine site is the private Ananda School.

[14] Gary Snyder, *Mountains and Rivers Without En*d, Counterpoint (1996).

Sierra Family Medical Clinic, again within ¼ mile of the west works of the proposed mine tunnel, is the only medical facility on the San Juan Ridge. The next closest facility is over 20 miles away in Nevada City. The Sierra Family clinic is an award-winning provider of medical services to low-income populations throughout several Counties, and thus any impacts to this clinic's water supply would have an impact on lower-income families who reside throughout Nevada County and in adjacent counties. The Grizzly Hill School and the Sierra Family Medical Clinic both depend on water wells located within ¼ mile of the proposed mine.

Zoning on private lands around the proposed project is a mix of Agricultural (AG), Forest (FOR, TPZ), and Rural Residential. More than 1000 private parcels exist within a three mile radius from the proposed mine site. In addition to residential uses, this community like much of Nevada County hosts a large number of home businesses. Further, Ananda hosts 37 businesses including a market and a private school.

The San Juan Ridge is also home to some of Nevada County's most significant family operated food farms, and was the start of Nevada County's Community Supported Agriculture movement. Mountain Bounty Farm was Nevada County's first CSA, and now feeds 500 families from throughout the County. The founder of Peaceful Valley Farm Supply makes his home here. The San Juan Ridge is also home to the Double Oak Winery and vineyards, Grizzly Hill Farms, Olalla Farms, You Bet Farms, the Ananda farm, the Reader Ranch, the Coughlin farm, and historic farm lands that are still in production.

The San Juan Ridge is also within the checkerboard land ownership pattern that characterizes this part of the Sierra Nevada, a relic of the public land grant intended to further construction of railroads. The immediate vicinity of the mine includes property under the stewardship of the Bureau of Land Management (BLM), USDA Forest Service, and California State Parks. The mine will affect tributaries of the South and Middle Yuba Rivers, some of which flow directly into the South Yuba State Park and BLM lands, and the portion of the South Yuba River designated under the Wild and Scenic Rivers Act. Impacts of dewatering could also affect water sources on public lands uphill of the proposed mine. The location of this project adjacent to various public lands and well-used trails may have serious impacts on associated recreational uses.

This backdrop of mixed land ownership has shaped this community, as well as being a factor of great importance to those who have chosen to move here. The fact that residences and performance centers are located next to large tracts of public land has resulted in a high expectation of quiet as well as an ethic of involvement and responsibility for the surrounding landscape.

A part of this ethic is the idea that resource extraction and environmental protection are complimentary endeavors, rather than mutually exclusive objectives. One local non-profit based on this principal is the Yuba Watershed Institute (YWI), which conducts public environmental education and produces literary works on the natural world.

Established by San Juan Ridge residents in 1990, the group was formed when residents forged a groundbreaking cooperative agreement with the BLM that provides for joint

management of almost 2,000 acres of BLM land. The agreement is designed in part to foster timber production and development of old growth forest habitat, rather than to prioritize one over the other. Called the 'Inimim Forest, all of the land subject to this agreement lies within a three mile radius of the proposed mine.

The physical environment has likewise shaped our community's active land stewardship. Local residents work together to remove invasive species from road corridors[15] and from public and private lands. Members of the community have conducted fuels reduction activity supported by grants for these efforts. Private parties have hired fuels reduction crews and equipment to clear land in a manner that mimics natural fire regimes, at great cost to themselves. In addition, citizen-initiated monitoring and restoration efforts have included wildlife monitoring programs composed of private and YWI motion-activated cameras, meadow restoration projects, and forest stewardship projects. In the context of this community, the potential impacts of the proposed mine are more significant, because the baseline now reflects a less damaged environment than the typical urban-wildlands interface landscape. This reality should be reflected in the EIR.

The EIR should contain accurate estimates of local residents, and local wells that may be affected by the proposed mine. Further, the variety of uses that surround the mine property should be identified in the EIR, and the special requirements of these uses should be disclosed and assessed. The range of businesses should be disclosed and impacts to businesses, property values, and the economy should be assessed. Finally, the impacts of the proposed mine should be assessed in light of the substantial work that this community has performed to improve the ecological condition of the affected environment, such that environmental degradation caused by this project is not only detrimental to the land, but also to the community's values and to their willingness to work to better their local area.

B. Ecological Environment

The vicinity of the proposed mine supports a particularly complex and diverse variety of vegetation and habitat types. Because the mine property is dominated by historic hydraulic mining diggins, it would be easy to develop an incomplete understanding of the many sensitive and important habitats that this mine will affect. Indeed, the previous environmental documents failed to address important impacts of the mine, and since that time the same resources have become more important and further degraded and potentially affected species have become listed as threatened with extinction under the State and Federal Endangered Species Acts.

The landscape surrounding the mine tunnel supports some of the area's few remaining older forest stands, wet meadows and wetlands, and streams and creeks. Tributaries to the Wild and Scenic South Yuba River and Middle Yuba River may be directly affected by the proposed mine. The hydraulic diggings and areas surrounding the diggins contain

[15] It is important to note here that when what was previously Siskon Gold Mine harvested the proposed mine site for timber, the invasive species Scotch broom was spread introduced to new places. The San Juan Ridge Mine still harbors one of the few remaining Scotch broom occurrences in the neighborhood due to the diligent removal conducted by local residents (L. Greensfielder, personal communication, 2012).

wetlands that are home to very rare species, including a club moss that may be one of only three occurrences in the State of California.

The opening to the proposed mine tunnel is located within the North Columbia diggins, a site that was hydraulically mined in the 1800's. Since the cessation of hydraulic mining upon passage of the1872 Mining Law, the site has recovered only a small portion of its historic vegetative cover. Within this environment, the dominant vegetation is whiteleaf manzanita (*Arctostaphylos viscida)* and biological soil crusts, with scattered ponderosa pine (*Pinus ponderosa)* and other pine species. Within this heavily impacted landscape, there are islands of conifers, isolated spring-fed wetlands, seasonally inundated depressions, and streamside riparian areas.

Wetland habitats are particularly susceptible to damage that could result from the proposed mine. Wetlands near the proposed mine and on the mine property range in description from springs to fresh, emergent wetlands, dry meadows, wet meadows, bogs, and streamside riparian wetlands. Some wetlands are dominated by herbaceous species, while others are dominated by tree and shrub species such as alder and willow.

Of great botanical interest is the flora associated with the extensive wetlands and the year-round flowing water in the gravel channels throughout the site. These wetlands support a mix of plants that is found nowhere else in California or the rest of the country. There are occurrences of sensitive plant species identified in the California Natural Diversity Database[16] that are presumed to occur in the wetland areas, including the extremely rare inundated bog clubmoss (*Lycopodiella inundata*) and the brown beaked-rush (*Rhynchospora capitellata)*.

The most unusual feature of this flora is that the dominant individual species found here are almost all growing out of their typical range. The delicious and tangy eastern cranberry, *Vaccinium macrocarpon*, carpets the marshy floor in several areas of the wetlands, both on the San Juan Mine site and adjacent BLM lands. This plant is grown commercially in the eastern U.S. and in Oregon and Washington, but it is otherwise unknown in California. Old-time residents of the San Juan Ridge have picked their Thanksgiving berries from these plants for as long as they can remember. "The Jepson Manual of Higher Plants of California" lists the North Columbia site as the only place in California where this plant occurs.

Labrador tea (*Ledum glandulosum*), tinker's penny (*Hypericum anagalloides*), Sierra laurel (*Leucothoe davisiae*), and lodgepole pine are found on this site, yet these plants do not normally occur below 4,000 or 5,000 feet at this latitude. The sundew (*Drosera rotundiolia*) is a circumboreal insectivorous plant that grows in many of the wet areas throughout the site and on adjacent BLM lands, yet it is otherwise rare in Nevada County.

As to wetland associated wildlife species, there have been multiple sightings of the Western pond turtle (*Clemmys marmorata)* near emergent wetlands. Migrating sandhill cranes have also been sighted in wetland areas on the mine property.

[16] California Department of Fish and Game, *California Natural Diversity Database* (2012), available at http://www.dfg.ca.gov/biogeodata/cnddb/.

The hydrology of the mine property may be intimately connected to the wetland habitats on and surrounding the property, as well as to the streams that find their headwaters here. The aquifer from which the mine plans to draw is likely interconnected with the aquifer that feeds the springs that support these various wetlands, making these wetlands susceptible to being drained by the proposed mining activities. Further, alteration of subsurface gravels is likely to impact subsurface water flows, and thus the location of seeps, springs, and other wetlands.

Riparian and aquatic habitats on the mine property and in the larger area are also vulnerable to impacts of the proposed mine. The Shady, Spring and Grizzly Creek drainages all find portions of their headwaters on the mine property. Shady and Spring Creeks are tributaries of the South Yuba River, and Grizzly Creek flows into the Middle Yuba River. The Yuba River support fish species listed under the Federal Endanger Species Act (ESA) including, Central Valley spring-run Chinook salmon, Central Valley steelhead, and North American green sturgeon. These species utilize downstream habitat in these river systems, but are directly affected by water that flows from these streams and upstream reaches, and potential habitat deemed important for some of these species' survival is located in nearby upper reaches of the Yuba Rivers.

Creek ecosystems are dependent upon historic flow regimes that have shaped the creeks as they are today. These creeks have variable flow rates consistent with the Mediterranean climate of the Sierra Nevada, in which most precipitation occurs during the wet, winter months and where much lower flows characterize the dry, hot summer months. Jones and Stokes reports that Spring Creek has winter base flows of 100 cubic feet per second (cfs) and base flows of less than 1 cfs during the summer.[17] Though no seasonal base flow rates were provided for Shady Creek, a survey on March 27, 1996 found the flow rate to be 2.7 cfs. Thus, discharge into these creeks in summer months, or dewatering, could effect dramatic changes in these aquatic ecosystems.

Species that find habitat in these streams rely on these predictable, variable flows for their life cycle. All three of these creeks are known to support populations of foothill yellow-legged frogs. Creeks and ponds affected by the proposed mining also possess potentially suitable habitat for the California red-legged frog. The Western pond turtle may utilizes some of this habitat during portions of its life cycle. The current condition of habitat and population health for the foothill yellow-legged frog and other amphibians may have been degraded by past impacts of the Siskon mine, which included discharge that occurred during previous mining operations.

Older forest habitats occur in close proximity to the proposed mine site. A combination of voluntary management on private lands and special designations on adjacent public lands has created an opportunity for older forest habitat characteristics to develop and be preserved. BLM lands directly adjacent to the proposed mine site are managed for old

[17] Jones & Stokes Associates, Inc. , Final Report: *Environmental Analysis of Increased Discharge of Groundwater from San Juan Ridge Mine to Spring and Shady Creeks* (1996).

growth conditions.[18] The South Yuba River is designated under the Wild and Scenic River Act, and the South Yuba River State Park also manages lands in part to conserve the natural environment. These protected lands support mature coniferous forests that provide habitat to a diversity of flora and fauna, including the sensitive California spotted owl (*Strix occidentalis occidentalis*), northern goshawk (*Acipeter gentilis),* and pileated woodpecker, as well as aforementioned riparian species.

The larger landscape of the San Juan Ridge is dominated by a mosaic of mixed conifer or Ponderosa pine forests, with pure stands of oak woodlands and chaparral throughout. The mixed coniferous forests in Nevada County have been characterized as "a highly variable and species-rich assemblage"[19] that is characterized by a mix of conifer and hardwood species. This vegetation type is known to support sensitive species that include Brandegee's clarkia, Butte County fritillary, Humboldt lily, as well as northern goshawk, and California spotted owl. The Ponderosa pine forests strongly resemble the mixed conifer forests in species and structure, though Ponderosa pine is dominant in the canopy. On the San Juan Ridge in the elevation range of 2-4,000 feet, this vegetation type is found on all aspects, where soil conditions allow. The Ponderosa pine forests are known to support many of the same sensitive species as mixed conifer.

Several types of woodlands are known to occur on the San Juan Ridge in the vicinity of the proposed mine. They include black oak, canyon live oak, oak-foothill pine and blue oak woodlands. These woodlands support sensitive species such as Brandegee's clarkia, Butte County fritillary, Western pond turtle, and Humboldt lily.

Foothill chaparral vegetation is the most common chaparral type on the San Juan Ridge below elevations of 4000 feet, and occurs in a variety of topographic, edaphic, aspect and successional conditions. Chaparral species are often early successional, but are also a part of most other vegetation types, and these species are climax communities in environments that are too hot, dry, rocky and/or steep to support other tree-dominated vegetation types. Foothill chaparral ecosystems provide habitat for over 109 vertebrate species,[20] and sensitive species including Brandegee's clarkia, Humboldt lily, and California horned lizard.

In summary, the mine property and surrounding environs support a wide diversity of habitat types, including unique and sensitive habitats that support rare, threatened and endangered species. A full assessment of cumulative impacts to these species requires mapping of vegetation and habitat types, including older forest, wetlands, riparian habitats, as well as other habitats. More information on habitat and vegetation types and their constituent species can be found in the Nevada County Natural Resources Report.[21]

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[18] Yuba Watershed Institute, Timber Framer's Guild of North America, and Bureau of Land Management, *Inimim Forest Timber Harvest Implementation Plan* (1996); for a copy of the plan, see (http://www.yubawatershedinstitute.org/plan.cfm)

[19] Beedy, Dr. Edward C., and Dr. Peter Brussard, *A Scientific Assessment of Watersheds and Ecosystems,* Nevada County Natural Resources Report (2002).

[20] *Id*.

[21] *Id*.

IV. Compliance with California Environmental Quality Act

The proposed re-opening of the San Juan Ridge Mine project may have significant impacts on the environment and human beings on the San Juan Ridge. Under the California Environmental Quality Act, these impacts must be addressed in an EIR. Further, this EIR must provide a detailed and accurate description of the proposed project, must identify significant impacts, must evaluate a wide range of reasonable alternatives to the proposed project, and must prove measures to mitigate potentially significant impacts.

The Legislature enacted CEQA to "[e]nsure that the long-term protection of the environment shall be the guiding criterion in public decisions." *No Oil, Inc. v. City of Los Angeles*, 13 Cal. 3d 68, 74 (1974). The Supreme Court has held that CEQA must be interpreted to "afford the fullest possible protection to the environment." *Wildlife Alive v. Chickering*, 18 Cal. 3d 190, 206 (1976) (quotation omitted). It is towards those ends that the California Environmental Quality Act (CEQA) requires the preparation of an EIR whenever a public agency proposes to approve or carry out a project that may have one or more significant impacts on the environment (§§ 21080, 21100, 21151).

The following comments identify impacts that may be significant, as well as providing information that we consider important to a complete analysis of effects on the environment and on human beings.

A. The EIR must clearly describe the proposed project; CEQA demands an accurate, stable and finite project definition that addresses the "whole of the action" under review.

The EIR must provide a detailed description of the proposed mining project in an accurate, detailed, and finite manner such that the impacts of the proposed mining can be evaluated. CEQA decisions have long recognized that "an accurate, stable and finite project definition is the *sine qua non* of an informative and legally sufficient EIR." (*County of Inyo v. City of Los Angeles (III)* (1977) 71 Cal.App.3d 185, 199.) The CEQA process cannot "freeze the ultimate proposal in the precise mold of the initial project; indeed, new and unforeseen insights might emerge during the investigation, evoking revision of the original proposal." (*Id.*)

The project description provided in San Juan Gold Corporation's Application and in the attached Operations Plan does not meet this requirement. The project is not finite, but rather contains provisions for temporary closure that make what appears to be a 10-year project into one that could take many decades to be completed. Further, descriptions of the planned mining operations fail to focus on the actual extent and physical reality of proposed site-disturbing activities, making it difficult to understand where specific impacts will occur.

Precision and consistency in a lead agency's characterization of the project under review also reinforces related principles of CEQA: that the project must embrace the "whole of

the action" (14 Cal. Code Regs., § 15378(a)); and that assessments in an EIR may not be used to justify a decision already made. In sum, CEQA "compels an interactive process of assessment of environmental impacts and responsive modification which must be genuine." (*County of Inyo v. City of Los Angeles* (*VI*) (1984) 160 Cal.App.3d 1178, 1185.)

The past EIR failed dramatically to comprehend and disclose, much less mitigate, potential impacts of the project to water supplies and other natural resources. Further, new impacts have come to light, and the present project occurs against the backdrop of former impacts. Nevada County now has a chance to respond to that reality, and produce an EIR that looks at the whole of this project in light of changed circumstances and new information. In addition, while the EIR need not be exhaustive, disagreements between experts must be disclosed and evaluated, and in general, there must be a "good faith effort at full disclosure." CEQA Section 15151.

The Application, Plan of Operation, and Reclamation Plan provided thus far by San Juan Mining Corporation do not provide the level of detail, disclosure, and specificity needed to evaluate important potential impacts of the proposed plan for their significance. Further, the EIR should make sure to address the impacts of the whole of the action, including past impacts of the mine as well as proposed impacts of the project. Below, we address needed additions to the project description, as well as questions we have and analysis we believe is needed to provide sufficiently detailed information concerning the proposed project.

1. The Proposed Action Should Be Described in a Manner that Provides for Full Disclosure and Evaluation of Potentially Significant Impacts

The EIR should provide a description of the proposed action that makes clear the aspects of the proposed mining that are most likely to result in significant impacts to the human environment and risks to human health. The initial application provided by San Juan Gold Corporation fails to provide realistic information concerning the proposed project such that environmental impacts can be identified and evaluated, as well as disclosed to the public. The application failed to indicate that significant impacts were possible in areas where they are likely, and the Operation Plan buried important information concerning the likely extent of impacts in detailed technical discussion rather than portraying critical information (such as rates of water removal) up front in clear descriptions of the proposed mining. The DEIR should remedy this problem.

The proposed mine involves a number of activities that have the potential to have significant impacts on the environment and people in the watersheds affected by these activities. The mine project involves three phases: rehabilitation of the mining property infrastructure; mine operation ("production years"); and mine reclamation.

The first stage of the mine is identified as rehabilitation, during which roads will be "restored," existing transmission lines will be repaired, above ground facilities will be repaired, and access to the mine will be restored. Of critical concern in terms of

environmental impacts of this phase are the removal of water from the mine, and the creation of a 1,000-cubic yard stockpile when excavations are rehabilitated.

The EIR should clearly describe the environmental impacts likely to result from this initial stage including impacts caused by the initial removal of large quantities of water, and those likely to result from mining activities before all mitigations are in place. Specifically, the quantity of water to be removed is likely to result in rates of pumping that greatly exceed the rates that will occur on a daily basis. The effectiveness of settlement ponds to contain this water and impacts to the water supply must be thoroughly investigated in the EIR prior to approval of the project. In addition, the quality of this water must be assessed.

Following this phase, the mine plans to enter into production. This phase appears to involve the greatest potential far environmental harm and harm to human health. Thus, it is critical that the EIR make clear the nature and extent of the proposed activities, and that the potentially significant impacts are disclosed and identified as such. The application does not provide project descriptions, fails to identify significant impacts and obfuscates serious issues. Overall, the Application is confusing to a layperson, and even to environmental professionals attempting to assess potential impacts.

The following are some of the critical elements of the proposed mining plan that should be clearly explained and assessed in the EIR:

- **The life of the project must be correctly identified as up to 60 or more years, rather than just the ten planned production years:** The Operation Plan and Application proposed 10 *production years* for the mine. However, the way that the application and Operation Plan are structured allow for a project life that is not limited to ten years. The mine could close for up to 5 years, but would then be allowed to re-open with no new environmental documentation. The life of the project could extend for many decades in this manner. The Plan indicates that water will be pumped continuously during interruptions in operations.
- **The EIR must include an accurate estimate of the total quantity of water that is likely to be pumped from groundwater sources at the peak of pumping as well as on average**. This calculation should be made by a qualified hydrologist, and should be based on relevant scientific information, empirical evidence, and extrapolation from the former mining operation. The Operation Plan indicates that on average, 792,000 to 1 million gallons will be pumped per day. The hydrology report indicates that at the height of operation, up to 3.5 million gallons per day could be pumped from groundwater sources, and if the tunnel or explosives resulted in contacting another fissure, more pumping could be required.[22] The plan does not contain clear estimates for rates of pumping needed to remove water now located in the mine tunnel. This information should be presented in various units of measurement: cubic feet per second, gallons per day, and gallons per minute.

[22] Luhdorff and Scalmanini, at 68.

- **Information on likely and past peak pumping/rates of discharge should be clearly displayed:** While information as to average withdrawal may be useful, the biggest risk of significant impacts to human health and the environment occurs at peak levels of pumping and discharge. For that reason, analysis in the EIR should focus not on averages, but on risk at maximum foreseeable levels of water removal and discharge.
- **Likely discharge of water directly into creeks and overflow from infiltration and settlement ponds must be disclosed and impacts evaluated:** Discharge into adjacent creeks occurred during the last period of operation and may occur in the future. The Operations Plan appears to indicate that the settling and infiltration ponds will be used to mitigate possible discharge into creeks. The risk of direct discharge of mine effluent into creeks, either to prevent pond overflow, or inadvertently if ponds fail, must be assed in the EIR. The risk that toxic material will not be removed during peak flows must also be assessed. Proposed mitigations, including use of settling and infiltration ponds, must be evaluated for their effectiveness at not only replenishing groundwater resources, but also at preventing discharge clean and contaminated water into adjacent water bodies.
- **The location and extent of mining should be clearly described relative to human and environmental resources:** The proposed mining is extensive in terms of the amount of material to be removed as well as the distance and size of mine tunnels. The EIR should clearly depict the spatial relationship between proposed mining activities and current residences, properties, businesses, schools and other facilities open to the public, as well as environmental resources. This information should be available on public maps and interactive databases.
- **The proposed location of tunnels and tailing stockpiles should be identified clearly:** The proposed mine would create a tunnel that advances to the west of the mine opening for approximately 1.5 miles. Material will be removed from the tunnel at a rate of 122,000 bank cubic yards (bcy) the first year, and 196,000 bcy each year for nine years, totaling 2 million bcy. This material will become massive piles of tailings both on the surface and underground. This material poses various risks, including severe dust, water contamination, destruction of plants and wildlife habitat. The Plan also indicates the potential for large quantities of toxic metal to be produced in this process. These toxic metals may be produced at rate of 1440 lbs/day, and will be treated as hazardous substances or sold. Storage and transportation of these materials present risks that should be assessed in the EIR.
- **The EIR should contain realistic analysis of post-mine tunnel stability and changes in hydrology:** Following excavation, approximately 60% of the material removed is oversized and will be screened and returned to the tunnel to be used for backfill and allowed to solidify. The EIR should assess how this material is expected to "solidify" without fines, and if material will be stored at the surface, where and for how long this material will be stored. Impacts of replacing cemented gravels with fill on hydrology and tunnel stability should be assessed in the EIR.

- **Extent and impacts of blasting should be fully disclosed in the EIR:** The excavation will occur with either a continuous mining machine (electric) or with blasting, using up to 300,000 lbs/year of 'ANFO' (ammonium nitrate and fuel oil). The impacts of this blasting or excavation on noise levels, safety, wildlife, and other resources should be evaluated in the EIR.
- **Creation of Settling Ponds**: There is one existing settling pond. The Operation Plan anticipates the creation of 10-12 additional settling ponds, each holding a total of 48 acre-feet of water. The settling ponds are reportedly designed to provide a minimum of 4 hours retention time and to contain a 24-hour, 100-year storm event. The plan contains no calculations that demonstrate the adequacy of the proposed pond system to hold and treat the volumes of water proposed to be pumped, or to detain the required amount of runoff from storm events, particularly during initial mine dewatering. This information must be evaluated and disclosed in the EIR. Further, the total area affected by creation of settlement ponds and the location and treatment of material removed to create the pond should be disclosed in the EIR.
- **Creation of Infiltration ponds**: The Operation Plan provides few specifics as to the quantity, location, or sizes of settling ponds, and further fails to specify holding time for water pumped into the infiltration ponds. Thus, it is impossible for the lead agency to evaluate whether these ponds have sufficient capacity to prevent discharge into surface waters, whether they will be effective at recharging groundwater, or how this recharge will relate to the aquifers from which groundwater has been removed. More detailed information must be provided in order to evaluate whether settling and infiltration ponds will result in effective mitigation of impacts, and also to assess the environmental impacts of the ponds themselves.
- **Surface drilling should be mapped and impacts to human safety and the environment addressed:** San Juan Gold plans to drill an additional 25 'definition holes' annually to define where the ore body is located, and an undefined number of ventilation and escape holes measuring 30-120 inches diameter. Many of these holes will be located near a school and adjacent to Bureau of Land Management land where local people hike and recreate. The holes present a risk to human safety and are likely to have hydrologic impacts. Previously drilled holes do not appear to have been sealed beyond the first 20 feet; the DEIR should assess if that reclamation measure is sufficient.[23]
- **Transportation and utilization of hazardous substances:** The proposed mining involves transportation and utilization of toxic and hazardous substances that pose a threat to human health, particularly as use and transportation of substances will occur within one-quarter mile of a public school. Explosives transported to the site may pass many residential and urban communities along major transportation corridors. Final mineral concentrates may contain metals at toxic levels to be treated as hazardous materials. The Application does not make clear which metals or hazardous substances may be encountered, how they will be transported, or how risks will be mitigated.

[23] State of California, Department of Conservation Office of Mine Reclamation, *Letter to Tod Herman regarding the San Juan Ridge Mine Reclamation Plan, CA Mine !D# 91-29-0017,* April 3 (2012) at 3.

2. Additional Information Is Needed

In addition to the above suggestions to improve the description of the proposed project, the following additional information is necessary to an evaluation of potentially significant impacts, and will aid the public in understanding the proposed project and its possible effects.

a) More information regarding past and foreseeable future stability of mine tunnels is needed, and existing information must be disclosed to the public.

Reports of tunnel instability were made during the Siskon mine operation. The EIR should present an evaluation of tunnel stability, both during operations, and when loose material is replaced in the tunnel. The Operation Plan submitted states that "oversized material from the underground screening plant will be backfilled into the two excavated panels and allowed to solidify." The plan further states that "[b]y using this technique the amount of open excavated ground will be reduced and the global ground support of the mine will be improved."[24] It is unclear how these recently excavated materials will reach a structurally solidified state that will achieve the structural support stated in the operations plan. This information is critical to an accurate evaluation of human health and safety risks, and is important to the public who are being asked to support this project due to its ability to provide jobs to local people.

b) Up to date fault and water mapping should be assessed as a tool for identifying and avoiding impacts to water quality and mine stability.

The existing mapping of faults provided in the application materials should be updated as part of the EIR. The regional faults and fractures, the nature of the bedrock, and the location and size of aquifers in the consolidated gravels and bedrock should be assessed and mapped using best current techniques. This information should be gathered prior to completion of the EIR, so that it can be utilized to assess risks to local wells and develop effective mitigation strategies.

c) The EIR should assess and provide scientific support for the effectiveness of proposed horizontal drilling in avoiding water sources.

The Application fails to clearly explain why horizontal drilling is the most appropriate strategy to avoid water-bearing fractures. The EIR should include justifications for using this technique, including an assessment of whether horizontal drilling has prevented mass dewatering events at other sites, its effectiveness in comparison to other techniques, and the likelihood of horizontal drilling causing damage to the aquifer if conducted improperly. The EIR assessment of this proposed mitigation should be based on a robust literature review regarding the applicability of horizontal drilling to mitigating impacts to water bearing features. Testimony from experts who are critical of this technique as well as those whom have used this technique to prevent mass dewatering events at other similar operations (tunnels through fractured bedrock) should be included in the analysis.

[24] San Juan Ridge Mine Operations Plan (2012), at 10.

d) The EIR must conduct species surveys for rare, threatened, or endangered species in the appropriate season prior to commencing mining activities.

No surveys for rare, threatened or endangered plant and wildlife species were performed before the application was made. These surveys need to be conducted during the appropriate season and must be completed before the EIR can assess potential impacts to sensitive species and evaluate the effectiveness of mitigation measures. The EIR should also consider population trends and species viability over the potential life of the project.

e) Nevada County should conduct a water budget analysis prior to certifying an EIR for this project.

The dewatering and water use proposed by this project may cause significant if not irreparable impacts to local wells, wetlands, streams and aquifers supporting private and public water supplies and natural communities. The potential for these impacts occur must be assessed in a robust manner, by conducting a water-budget analysis, a standard tool for assessing the sources and current uses of groundwater, its distribution in relation to the mine, and how proposed withdrawals will affect human and environmental uses in time and space. It is particularly important that this study be completed prior to approval of the mine's re-opening, given the previous damage to local water supplies. Evaluation of affects to public water supplies is particularly critical. The public school water supply is still affected. Other public water supplies including the medical clinic well are at risk.

f) Updated information regarding residences, businesses, and other features must be included in the EIR.

The information on local populations, businesses and land uses in the prior EIR was inaccurate at the time of publication, and there have been substantial increases in each of these categories since that time. The new EIR should contain accurate updates of this key information.

g) The EIR should include a monitoring program designed to detect changes in water availability due to mining on wetlands, springs, creeks, aquifers and plant communities

The EIR should include a monitoring program that follows established protocols and scientific methods.[25] The plan should be designed to detect the effects of project dewatering, water use, recharge and discharges on springs, wetlands, streams, aquifers and vegetation with adequate rigor. Given the extent of proposed withdrawals and redistribution of groundwater through recharge activities, baseline data must be gathered for at least one year, and preferably several years under a variety of conditions, prior to initiating mining.

[25] *See, e.g.,* Hayden-Wing et. al, *A method for detecting Dewatering effects of underground mining activities on surface wetlands,* Proceedings of the Symposium of the 16th Annual National Meeting of the Am. Soc. Surf. Min. Recl. (1999).

h) Update the 1996 Luhdorff and Scalmanini study to include a full report on the previous de-watering event of the mine including input from all residents within the affected watersheds.

The Luhdorff and Scalmanini report provided a great deal of useful information regarding impacts to wells.[26] However, some local wells were missed, and no follow-up information has been gathered. A new hydrogeology study should be prepared that provides an update regarding the current condition of previously affected wells and addresses potential risks of mine re-opening on all nearby wells. One limitation with past studies was the arbitrary radius from the mine tunnel that was used to assess where impacts were likely to occur. In a fractured-bedrock setting, impacts depend on subsurface, hydrogeological conditions, which vary spatially rather than in relation to a uniform distance from a point. Critical factors include where recharge is occurring, where groundwater occurs and its likely source, the extent, direction and productivity of fractures, and the season and magnitude of local water use. An independent third party should conduct this study. Interviews with local residents should be a part of this study.

B. CEQA Requires Identification of Potentially "significant effects on the environment"

The proposed mine re-opening threatens a host of potentially significant impacts, in part due to the large amount of water to be removed and the large size and length of the tunnel to be created. Each of these potentially significant impacts must be addressed in the EIR. The primary task during the scoping phase of the EIR process is to identify issues that must be addressed in the EIR, including identifying impacts to the environment that may be significant. CEQA states, "[t]he purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided." CEQA, Public Resources Code §21002.1(a).

CEQA provides further guidance regarding identification of significant impacts. "'Significant effect on the environment' means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." CEQA Guidelines §15382. In addition, there are a number of potential impacts to the environment that may result from the proposed action that are significant as a matter of law. The California Environmental Quality Act identifies a impacts that must be found to be significant by the lead agency. Specifically, CEQA provides that:

> (a) A lead agency shall find that a project may have a significant effect on the environment and thereby require an EIR to be prepared for the project where there is substantial evidence, in light of the whole record, that any of the following conditions may occur:

[26] Luhdorff and Scalmanini, *Hydrologic Study of Ground-Water Impacts from Mine Dewatering at the San Juan Ridge Mine* (1996), at 66-68.

(1) The project has the potential to*:* substantially degrade the quality of the environment*;* substantially reduce the habitat of a fish or wildlife species*;* cause a fish or wildlife population to drop below self-sustaining levels*;* threaten to eliminate a plant or animal community*;* substantially reduce the number or restrict the range of an endangered, rare or threatened species*;* or eliminate important examples of the major periods of California history or prehistory.

(2) The project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.

(3) The project has possible environmental effects that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

(4) The environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.

CEQA Guidelines §15065**.**

The following impacts are those that the San Juan Ridge Taxpayers Association believes are both possible as well as significant. The potentially significant impacts include those for which there is a mandatory finding of significance under CEQA; those that are likely to be significant; and those likely to be significant when viewed as cumulative effects, when other past, present, and reasonably foreseeable actions are taken into account.

1. Significant impacts on water supply and drinking water, including public water supplies, are likely.

The loss or reduction of domestic and public water supplies is a potentially significant impact to human beings that must be addressed and mitigated in an EIR.

The applicant proposes to remove an average of 1 million gallons per day from the mine tunnel. Based on historic operations, peak dewatering rates could reach 3.5 million gallons per day or more. Compare this to the total quantity of groundwater pumped from all domestic wells in Nevada County, which according to recent USGS data totals 11.8 million gallons per day, and the total quantity of groundwater pumped for all uses, which is 21.33 million gallons per day.[27] This project would remove an enormous quantity of water from an aquifer that is likely the same aquifer that provides the only drinking water supply for thousands of residents. In addition, public water supplies for a school, medical clinic, and numerous local businesses also depend on this aquifer. It is very unlikely the mine can pump this quantity of water without significant, negative impacts on water supply.

[27] *See* United States Geological Survey, *Estimated use of water in the United States in 2005* (2009), available online at http://water.usgs.gov/watuse/data/2005/.

The Luhdorff and Scalmanini report states that by the completion of the project, the tunnel will intercept 1765-2450 gpm *if* no major faults are hit. This routine rate of dewatering under normal operations is 35-88% greater than the maximum rate observed during the catastrophic dewatering event of September 1995 when 11 wells went dry.

The EIR must address the effects of this increased rate of pumping on human water supply as well as the natural environment. Further, the effects of water removal should be assessed using accurate baseline information and must take into account potential cumulative effects of pumping in combination with existing stresses on the bedrock aquifer due to long-term use, population growth, climate change, and periodic drought conditions.

a) Based on past impacts, well dewatering due to catastrophic events is likely

Previous construction and operation of the mine caused dewatering of wells. Evidence indicates that past operation of this mine caused significant dewatering of at least 12 nearby drinking water wells.[28] In addition, six other well yields were also diminished by the event.[29] It is likely that other, unmonitored wells were also affected.

All but one of the wells that were dewatered were affected during one dewatering event. In September, 1995, the San Juan Ridge Mine operators excavated into what has been labeled the 'F6' fault in the fractured bedrock below the gravels being mined.[30] This fault was water bearing, so when the tunnel contacted the fault, millions of gallons of water entered the mine tunnel daily. This flow continued from September 1995, when the fault was encountered, to January 1996, when discharge into the tunnel was blocked with concrete.

The proposed mining operation would involve conditions very similar to those that precipitated the past dewatering events. The San Juan Ridge Mine proposes to tunnel across three other major faults (F2, F3 and F5) that have been identified since the initial dewatering event and would operate in close proximity to the F6 fault.[31]

In addition to the risks associated with crossing the identified fractures, the proposed tunnel is likely to encounter fractures that have yet to be identified, thereby increasing the likelihood of significant dewatering impacts.

Fractured bedrock aquifers are composed of highly complex networks of water-bearing features including joints, fractures, and faults. As a result, it is impossible to determine with certainty the location and depth of water bearing features. Thus, any tunneling in or near fractured bedrock formations could once again result in catastrophic aquifer dewatering and the subsequent dewatering of local wells.

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[28] Luhdorff and Scalmanini, *Hydrologic Study of Ground-Water Impacts from Mine Dewatering at the San Juan Ridge Mine* (1996), at 68.
[29] *Id.*
[30] *Id* at 67.
[31] *Id.*

b) Dewatering of wells is likely to occur even during normal operations

Even without another catastrophic dewatering event, the estimated volume of water to be removed from the mine tunnel is equivalent to that discharged during the catastrophic dewatering event in fall 1995. The maximum discharge recorded during that event was approximately 1300 gallons per minute or 1.9 million gallons per day. According to Luhdorff and Scalmanini, by the time the mine tunnels are complete, between 2.5 and 3.5 million gallons of water will be pumped from the mine per day.[32] This is a potential 45% increase in groundwater pumping, compared to the 1995 event, and this figure does not include any additional pumping that would be necessary if a similar catastrophic dewatering event occurred. Continued removal of water at this rate could affect both the gravel and bedrock aquifers if the rates of pumping exceed rates of recharge.[33]

c) Many wells are located in close proximity to the proposed mining activities and must all be identified in the EIR.

The potentially affected wells are great in number and in importance to the community and to human health. The last EIR did not identify all wells, and did not adequately address reasonably foreseeable new wells. The new EIR should address impacts to all wells that may be affected. There are more than 1000 individual parcels within a three mile radius of the proposed mine tunnel.[34] A one-mile radius includes the wells of the local elementary school, the water wells for a number of local businesses, and the water well for the Sierra Family Medical Clinic, which is the only medical provider serving this area. The EIR should identify all known wells, distinguishing wells that serve as private drinking water supply from those providing public water supply (serving more than 25 people). The EIR should also identify locations of reasonably foreseeable future wells, which at a minimum means one well per parcel, and the total number of wells should be consistent with full build-out under the General Plan.

d) The EIR should evaluate impacts to water availability in light of evidence that the aquifer is diminishing at present.

A comparison of past and more recent data indicates that the aquifer may already be becoming depleted. Luhdorff and Scalmanini stated that before 1990, groundwater at the mine site migrated from the bedrock aquifer into the gravels above. However, at some point following 1990 the gradient of flow reversed, such that water in the gravels now moves downward into the bedrock.[35]

This reversal in hydraulic gradients suggests that there is less bedrock water available now. Available data indicates that water removal and climate may have already had an impact on subsurface hydrology. Luhdorff and Scalmanini indicate that this shift could be

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[32] *Id* at 41.

[33] *See, e.g.,* Zektser et al., *Environmental Impacts of Groundwater overdraft: Selected Case Studies in the Southwestern United States*, 47 Environ. Geol. 396 (2005); *Environmental impacts of groundwater overdraft: selected case studies in the southwestern United States*, USDA Forest Service (2007).

[34] There are 1026 parcels within a 3 mile radius of the proposed San Juan Ridge Mine. *See* www.mynevadacounty.com, which is based on data assembled by Parcelquest; this information was also obtained directly from Parcelquest by subscription.

[35] Luhdorff and Scalmanini, (at 17&18).

caused by the combined impacts of drought and increased population.[36] It is possible that more people and businesses relying on this aquifer for water, changes in climatic conditions, and perhaps permanent changes due to the breaching and sealing of the F6 fault, there is less water available now than before the mine opened in 1994.

Existing environmental trends are likely to further reduce water availability. Against this backdrop, the proposed removal of 2.5-3.5 million gallons per day is very likely to result in significant impacts to the groundwater supply for this community.

e) Recent drought conditions and varied precipitation should be considered in evaluating impacts of water removal.

In assessing potential dewatering impacts on the recharge rates of local wells, the EIR should take into account wet, dry, and normal years of precipitation. Precipitation in recent years has often been below the annual average of 52 inches for the project area, much less than the annual totals from the early 1990s (a particularly wet period). The catastrophic dewatering event of 1995 occurred in the fall, at the start of the rainfall season. The 1995-96 water year was extremely wet, with 73 inches of reported rainfall. Despite abundant rain, Luhdorff and Scalmanini reported that some wells did not recover to pre-mining levels after the 1995 dewatering event, even though discharge from the F6 fault to the mine was blocked.[37]

f) Effects of the radical increases in groundwater removal should be assessed by developing a water budget for the area.

The proposed mine would remove a large volume of local groundwater in comparison to pre-1994 or current rates of withdrawal. As stated above, development of a water budget for the area is an essential step in determining how water uses and sources are interrelated.

The potential for substantial depletion of groundwater supplies and significant lowering of the water table is a significant impact under CEQA, and requires a mandatory finding of significance. Average dewatering rates of 1 million gallons per day are proposed and peak dewatering rates several times higher are envisioned. These volumes are large, especially relative to USGS estimates that pumping of groundwater from all domestic wells in all of Nevada County totals only 11.8 million gallons per day.[38]

Given past impacts on the local community, a registered professional with expertise in similar assessments should be engaged to develop a water budget for the local aquifer as part of the mining application. Locations of groundwater recharge to the gravel and bedrock aquifers from the watershed above the mine should be identified and delineated. Estimates should be made of the amount of recharge from the different contributing areas

[36] (*Id* at 17&18).
[37] (*Id* at 46).
[38] United States Geological Survey, *Estimated use of water in the United States in 2005* (2009), available at http://water.usgs.gov/watuse/data/2005/.

under average conditions, and how this recharge varies with cycles of wet and dry years. Current withdrawals for domestic, industrial and commercial supply should be estimated.

The EIR should also estimate environmentally supported evapotranspiration by forest, wetlands and other vegetation; as well as stream flow in Spring, Shady and Grizzly Creeks and other significant local water features. Finally, the amount and timing of dewatering for mining and the location and means of re-infiltrating and/or discharging this water should be incorporated into water budgets, as well as the likely effectiveness of recharge based on varied locations of excavation and infiltration pond sites during the course of the proposed operations. The significance of the proposed dewatering and attendant risks to the community and local ecosystems can be contextualized and responsibly assessed only by estimating the magnitude and location of these interdependent components.

g) The issue of appropriate water quantity baseline should be addressed

Because the present supply of groundwater has been influenced by past operation of this mine, the EIR should define a baseline that reflects pre-project (1994) water levels in the aquifer and water supply conditions, as the basis for comparing potential impacts of the proposed mine re-opening. Using the current condition of aquifers as a baseline allows the applicant to piecemeal this project such that incremental, significant environmental impacts of this mine may be obscured.

h) The EIR must evaluate the effectiveness of horizontal drilling to avoid with certainty impacts to water quantity and quality.

As discussed previously, the EIR should explain why horizontal drilling is the most appropriate strategy to avoid water-bearing fractures and provide examples of how this method has been used in similar settings to prevent mass dewatering events at other mines. Given past impacts from catastrophic dewatering at the Siskon Mine, reliance on horizontal drilling as a mitigation measure should be rigorously assessed.

i) The EIR should disclose and evaluate issues associated with rights to groundwater supplies.

The EIR should disclose and summarize the regulatory setting as regards the water rights for waters intercepted, removed, recharged and discharged by the SJRM. Where appropriate, suitable mitigation, including compensation to impacted parties, should be proposed.

2. Potential negative impacts to water quality are significant and may impact human health and safety.

The proposed mining may cause significant impacts to human health due to negative effects on the quality of surface water and groundwater supplies. Potentially affected water supplies include domestic water supply wells and those providing public water supplies. Substantial degradation of the quality of groundwater is a potentially significant impact under CEQA, and is inconsistent with legal responsibilities to maintain existing

beneficial uses reliant upon local groundwater, including domestic supply and aquatic, wetland and riparian habitats and their associated plant and animal species.

In particular, the EIR should establish baseline water quality; then evaluate three likely ways in which the proposed resumption of mining could potentially contaminate local water supplies: 1) pollutants released from local substrates; 2) pollutants displaced from abandoned mine sites due to the soil disturbance and water discharge planned as part of mining activities; and 3) pollutants released due to spills or other discharges during transport to the site or use on-site as part of mining activities.

a) The issue of water quality baseline should be addressed

The current EIR should recognize that the present condition of local drinking water supplies is heavily influenced by the past operation of this mine. The original CEQA document failed to accurately assess risks of negative water quality impacts or develop adequate mitigation measures in the event that such impacts occurred. Deepening or replacing wells for those residents or users whose wells were dewatered or rendered undrinkable alleviated only the most serious threats to local water supplies, and then only in areas immediately proximate to the mine. The present EIR addresses resumption and expansion of mining, but must recognize this limitation in the prior assessment by defining baseline groundwater quality as that condition which existed before mining commenced in 1994. Degradation due to that operation should be recognized as a potentially unlawful degradation of water quality, and the risk of additional degradation in conflict with requirements of state and federal law should then be assessed. To do otherwise and use the current condition of wells as a baseline allows the applicant to piecemeal this project such that incremental, significant environmental impacts may be obscured.

b) Known toxins in deep wells and the mine tunnel caused pollution of wells during the past period of operation.

The EIR must address impacts to water quality associated with the proposed mining. There is a great deal of existing information concerning contamination of water supplies caused by the operation of the former Siskon mine. In 1996, Luhdorff and Scalmanini found that "water quality changes have occurred as a result of mining operations,"[39] but that these changes did not result in exceeding water quality standards for minerals except those established for iron, manganese and aluminum.[40]

However, later data indicates that mining did cause water quality standards to be greatly exceeded. Following the closure of the mine in 1997, Nevada County tested a number of wells. When constituents were identified at unhealthy levels, Nevada County contacted numerous local landowners, identifying the well(s) that had been tested and listing the concentrations of the particular constituents found.[41]

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[39] *Ibid.* at 73.

[40] Luhdorff and Scalmanini, *Hydrologic Study of Ground-Water Impacts from Mine Dewatering at the San Juan Ridge Mine* (1996), at 26; the report also noted high sulfate concentrations in one well, at 68 mg/L (*id.)*.

[41] Nevada County Department of Environmental Health , letter of 24 October, 1997, attached.

Nevada County determined that contaminants exceeding State drinking water standards or primary maximum contaminant levels included nickel, aluminum, iron, manganese, and sulphate concentrations. Turbidity, odor, and color exceeded secondary maximum contaminant levels.[42] Concentrations of iron were 133 times the level allowed by state standards; manganese was present at 163 times the state standard; Aluminum at 5.5 times the state standard. [43] Color was 13 times the state standard; odor 17 times the state standard; and turbidity 20 times the State standard.[44] In addition, as time passed, very low pH was reported in some wells.[45]

Individuals have reported specific health effects related to post-mining changes in their water. One person was diagnosed with toxic levels of aluminum in her blood.[46] Children reported feeling ill following consumption of the affected water.[47]

The effects of further contamination should be carefully assessed in light of past contamination. Nevada County should conduct an evaluation by qualified health professionals and medical or epidemiological researchers that assesses whether negative health effects may have resulted from past contamination. Second, the EIR should assess potential cumulative impacts of contamination on water supplies and human health. Finally, potential future contamination must be evaluated in light of this past and cumulative effects data.

c) Potential contamination by naturally occurring minerals should be assessed.

Luhdorff and Scalmanini concluded that observed changes in water quality were the result of mining operations. [48] Contamination of water supplies can result from naturally occurring elements associated with different rock types. Normally found deep underground, these elements are altered if groundwater flow paths change due to dewatering or well development (e.g., deepening). When concentrations of these constituents exceed recognized thresholds, they can pose a risk to human and animal health.

Examples of trace metals commonly found in local soils and bedrock include arsenic, lead, chromium, and manganese. The EIR should evaluate the risk that mining will cause impaired water quality, not only for these specific these contaminants but for the entire suite of constituents listed under Title 22 of the California Code of Regulations pertaining to use of waters designated for domestic or municipal supply.

In addition to evaluating potential contamination by excavation of the mine into the gravels and bedrock, the EIR should also identify the potential impacts on human health

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[42] *Id.* at 1.
[43] Nevada County Department of Environmental Health, letter of 11 December, 1997, at 4; *see also* Geissinger, S.,"Mining taints school's water." *The Daily Courier*, Dec 29, 1997.
[44] *Id.*
[45] *Id.* at 1.
[46] Pers. Comm. with Kathy Kerrigan.
[47] *See, e.g.,* Geissinger , Steve. "Mining taints school's water. " *The Daily Courier*, Dec 29, 1997.
[48] Luhdorff and Scalmanini, *Hydrologic Study of Ground-Water Impacts from Mine Dewatering at the San Juan Ridge Mine,* June, 1996, at 73

of deepening wells if further mitigation is required. The Siskon Gold mine drilled a dozen wells during its operation to mitigate the impacts of water loss caused by the mine. These wells were drilled to a greater depth to access the deeper bedrock aquifer that was not affected by the dewatering event. Some of the deeper wells exhibited elevated concentrations of iron, manganese, and aluminum.[49] Potential impacts to human health caused by the cumulative impacts of past dewatering and changes in drinking water quality from deeper wells must be considered in the EIR. In particular, the EIR must contain an assessment of many recent claims by residents of metal poisoning from consumption of their well water following past mining. While deepening wells may have been helpful in partially-mitigating water quantity issues, this mitigation may not have been equally effective in providing healthy water supplies to all affected parties.

Contaminants may also be present in the soils, gravels and fragmented bedrock removed from the mine as tailings. Thus, management of those tailings, as well as the toxic metal concentrates, is critical to protect the community from contamination issues. Mitigation measures should be designed that completely remove the risk of surface water and groundwater contamination from these sources. Contaminated soils that have been exposed to the surface must be managed to prevent erosion into local waterways.

d) Potential contamination due to disturbance of legacy contaminants at abandoned mine sites must be addressed.

Much of the aboveground area affected by the proposed project consists of abandoned mine sites in the form of hydraulic diggings. These historic mine sites are well-known sources of potential trace metal contaminants. Mercury pollution is the best-known example of a legacy contaminant resulting from historic mining in Nevada County and the Sierra Nevada. For example, high levels of mercury in both surface soil and water have been reported from Malakoff Diggings, which are within 5 miles of the diggings on the project site. Humbug Creek, which flows out of the Malakoff Diggings, is known to transport high levels of mercury to the Yuba River, and indeed is listed as 'impaired' under Section 303(d) of the Clean Water Act.[50] These data suggest that high levels of mercury might also be associated with the diggings site on the mine property.

Impacts of displaced mercury on aquatic ecosystems and associated species can be significant, and have been widely recognized. Studies of mercury transport and transformation on the Yuba River in 2010 lead to a moratorium on suction dredging in California rivers and streams.

The EIR should include an inventory of all former mining sites within the footprint of the proposed mine, including an evaluation of potential legacy contaminants such as mercury. This study will provide the basis for an assessment of the potential risks to human and ecosystem health due to disturbance of former mining sites, including releases of mercury and other trace metals into local waterways, such as Spring, Grizzly, and Shady Creeks.

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[49] *Id* at 26.

[50] United States Geological Survey: *The effects of sediment and mercury mobilization in the South Yuba River and Humbug Creek Confluence Area, Nevada County, California: Concentrations, speciation, and environmental fate—Part 1: Field characterization: 2010-1325A* 104 (2011).

e) Potential impacts of fuels, explosives, and other imported materials must be addressed

The proposed mining operations involve diesel fuel, explosives, and other potential pollutants that would be stored aboveground and used both above- and below-ground. The effects of a spill or unintended release of these materials, as well as contamination resulting from normal use, should be evaluated in an EIR. In particular, possible contamination of the aquifer by ANFO, an explosive made from ammonium nitrate and fuel oil, must be assessed. In perfectly balanced stoichiometric reaction these substances produce nitrogen, carbon dioxide and water. However, in actual practice, this mixture is commonly prepared using additional fuel oil, resulting in excess production of carbon monoxide and nitrogen oxides. Further, spillage of ammonium nitrate, a common nitrogenous fertilizer, risks causing over-enrichment or "eutrophication" of surface waters, and adverse impacts to aquatic species.

f) Potential impacts of toxic extractants must be addressed

Finally, the EIR should also assess potential impacts of possible release of contaminants from final processing of the ore. The Operating Plan indicates that these contaminants will be stored as hazardous materials. The EIR should list the potential contaminants, identify their potential health risks, and describe the means by which they will be transported, stored and further processed, or the method of their disposal. Potential impacts on air or water supplies should be evaluated.

In sum, potential contamination of water supplies, and resulting impacts to human health are a likely impact of the proposed mining activities. This is a potentially significant impact to human health that must be assessed and mitigated in the EIR.

3. Dewatering under normal operations or in response to catastrophic events could have significant, negative hydrologic impacts on upland, wetland and riparian vegetation in and near the project site.

The potential for dewatering and lowering of the water table to have significant impacts on vegetation and ecosystems must be assessed in an EIR. Discussion of potential impacts to individual plant and animal species is discussed below. Among the potentially affected plant communities are: wetlands, including known seeps, springs, bogs and seasonally-inundated wet areas on the mine property that support vegetation found only in wetlands; meadow areas on adjacent lands; forests, including locally-rare mature forest habitat; and extensive aquatic and riparian habitat associated with stream channels both on and adjacent to the mine property. Potential impacts of mine dewatering on each of these habitat types should be assessed in the EIR.

Several aspects of the proposed mining operation could potentially lower the groundwater table or change the location or availability of groundwater discharges resulting in a host of significant impacts to sensitive plant communities. First, and most importantly, the proposed removal of an average of 1 million gallons per day of groundwater under routine operations, and up to 2.5 to 3.5 million gallons per day at peak rates, will likely result in lowered water tables. These impacts could occur locally or

over a larger area. The effect would be to reduce water supplies to forest, shrub, wetland and riparian communities. Predicting these effects is difficult in a fractured-bedrock environment, and deepening or replacing wells will not mitigate this impact to habitat.

Second, routine or catastrophic dewatering could result in reduced groundwater inflows to streams, particularly in dry periods or seasons when groundwater is the main source of water supporting aquatic and riparian vegetation and species on and adjacent to the mining area.[51] Third, the application indicates mining will involve extensive tunneling into gravels. The displacement and removal of large amounts of gravel may result in significant alterations in the subsurface hydrologic environment. These activities will disrupt existing pathways for groundwater movement over a very large underground area and will redirect groundwater flows in this substrate, causing unpredictable impacts to water supply for surface vegetation and aquatic and riparian ecosystems.

Construction of infiltration and settling ponds may increase groundwater recharge in some areas. Potential impacts on groundwater flowing to seeps and springs should be assessed. Other habitats that may be affected include upland habitats, such as forests, adapted to dry conditions; wetlands, seeps and springs, where modified patterns and volumes of inflow will affect soil moisture and/or inundation and can lead to changes in wetland types; and stream channels, where changes in the persistence, timing and amount of water can affect the size and density of riparian vegetation, and the species composition of riparian and aquatic plant communities.

Lowering of the water table is likely to have negative effects on plant health, which in turn affects the health of plant communities. Plant communities result from complex and interactive physical and biological factors that are vulnerable to disruption. Physical factors that influence plant community health and composition include light, nutrient availability and soil moisture.[52] Plant communities are very susceptible to changes and are easily degraded due to reductions in water supply or changes in the seasonal availability of water.[53]

In upland areas, lowering the water table could significantly impact forest vegetation, increasing its vulnerability to pathogens including wood-boring insects. Lowering the water table can compound the impacts of moisture-stress on vegetation during dry months and periods, particularly during dry years and droughts. The risk of catastrophic wildfire may increase if vegetation is moisture-stressed or due to significant, drought- and moisture-related mortality.

Changes in groundwater availability can also result in shifts in species composition and can eventually cause vegetation type conversion.[54] Changes in vegetation due to

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[51] *See, e.g.,* United States Forest Service, *Technical Guide to Managing Ground Water Resources* FS-88 (2007).
[52] Krebs, C.J.. *Ecology. The Experimental Analysis of Distribution and Abundance* (5th ed. 1972).

[53] Zektser et al., *Environmental Impacts of Groundwater overdraft: Selected Case Studies in the Southwestern United States.* Environmental Geology (47):396-404 (2005).
[54] Hamandawana, H.. *Methodology to detect long-term trends in groundwater by monitoring changes in vegetation distribution*. 32 Int. Jour. Rem. Sens. 3329 (2011).

dewatering or changes in soil moisture availability could potentially affect a whole host of microhabitats, causing cascading impacts to the plant, animal and microbial biota that utilize these vegetative resources for food, shelter, and other habitat needs.

Finally, lowering the water table is likely to have significant, negative impacts on riparian vegetation and aquatic ecosystems, including wetlands. Changes in water levels could affect the extent and quality of local springs, seeps and other wetlands,[55] thereby threatening the health and persistence of the many plant and animal species that depend on these ecosystems. Wetland and riparian-associated species that could be affected include inundated club-moss, brownish beaked rush, Foothill yellow-legged frogs, red-legged frogs, Western pond turtles, and migratory birds such as the sandhill crane and willow flycatcher.

Lowered water tables could decrease water availability for riparian vegetation along Shady Creek, Spring Creek and Grizzly Creek. Reduced shading would increase water temperatures, which would impair habitat suitability for aquatic species including the foothill yellow-legged frog.

In sum, the EIR must address the full range of effects to vegetation that may be caused by water removal and other subsurface activities that will alter water flow. Such impacts include damage to wetlands, damage to riparian vegetation, and damage to upland vegetation and habitat. Effects should be considered in the context of changing climatic conditions, both climate change period drought conditions. Effects to specific areas that should be addressed include effects to Shady, Spring, and Grizzly Creeks; impacts to seeps and springs in the project area that feed specific meadows, including those off of Katahaska Way, Grizzly Hill Road, and Jackass Flats Road; any wetlands within and adjacent to areas affected by the mine tunnel; and older forest on nearby private and BLM, Forest Service, and State Parks lands.

The information underlying the EIR should included the results of a formal jurisdictional delineation of wetlands, seeps, springs, meadows and stream channels on and near the project site. These particularly sensitive areas should then be monitored (timing and extent of inundation; hydro period; discharge or flows) throughout at least one average rainfall season in advance of mining to establish baseline conditions in these habitats. Monitoring should continue during the period of mining operations, with annual interpretation of the monitoring data and reporting to public agencies. Monitoring should include installation of monitoring wells to assess existing groundwater levels near existing wetlands areas and at sites where groundwater levels or persistence is likely to change due to recharge operations.

4. Discharge of mine effluent directly and indirectly into surface waters has the potential for a host of significant effects.

The proposed project has the potential to have significant, negative impacts on riparian and aquatic ecosystems, including the effects of discharges into Spring and Shady Creeks

[55] Merritt et al, *Theory, methods and tools for determining environmental flows for riparian vegetation: riparian vegetation-flow response guilds* 55 Fresh. Biol. 206 (2009). *See also* Zektser et al. (2004) and USDA Forest Service (2007).

and possible dewatering of Spring, Shady and Grizzly Creeks. The EIR must evaluate potential effects of these discharges on plant and animal communities, especially the riparian and aquatic ecosystems in and near the project area.

Due to the inadequacy of the settling and infiltration pond system in 1995, direct discharge into Spring Creek occurred within the first year of mining operations. It is unclear from the current Operation Plan whether water will be released directly into either Spring or Shady Creeks or their tributaries. The water balance flow chart states that all water pumped either from wells or from dewatering operations will either be used for operations or be pumped into the settling ponds. The metrics used in both the Application and the Operation Plan vary and are confusing. For clarity, the EIR should be consistent in its use of metrics and conversion tables should be included.

It is unclear whether the proposed 10-12 additional settling ponds will be adequate to provide an adequate settling time before water is discharged into the infiltration ponds. The current plan lacks empirical information needed to evaluate the effectiveness of these ponds. What infiltration rates will be required? Will 10-12 48-acre-foot capacity ponds be sufficient to treat the water being pumped from the mine? How will this system operate under storm conditions, when surface runoff adds to the treatment and detention volume? What contingencies are proposed if fine sediment clogs the settling ponds faster than currently assumed? Will more ponds be built and, if so, where?

In addition, the San Juan Mine Corporation proposes to pump much higher volumes of water out of the mine then the maximum volume that was pumped during the previous operation. How will the settling and infiltration pond system be designed differently this time around to avoid direct discharge to the surrounding streams?

Chemicals stored underground (diesel fuel, lubricants, ANFO) could contaminate the water being pumped out of the mine. The Operation Plan does not describe how these chemicals and chemical spills will be kept out of the water pumped above ground for infiltration back into the aquifer or discharge into enter Spring, Shady, or Grizzly Creeks.. This effluent is likely to be contaminated with nitrates from blasting, petrochemicals from engine exhaust and accidental spills over the life of the mine, naturally occurring contaminants such as arsenic, aluminum, and manganese, and perhaps mercury from the hydraulic mining era.

Contaminants entering aquatic ecosystems may have adverse effects on water quality and direct impacts (i.e., toxicity) on aquatic and riparian species. For example, the project involves use and storage of petrochemicals, which are toxic to many forms of aquatic life, including fish, amphibians and macroinvertebrates. Exposure to these pollutants can also have profound, negative impacts on reproduction rates, food availability and habitat quality.

Some of these contaminants also have indirect or secondary impacts. For example, excessive algal growth, which results from nitrate contamination, can reduce dissolved

oxygen in surface water resulting in adverse impacts on reproduction, respiration and overall health of amphibians, fish, and macro-invertebrate species.[56]

Because the project area is an abandoned hydraulic mining site, mercury is also likely to be present in surface soils , such as those sites disturbed as part of settling pond and infiltration pond construction. The mercury could be mobilized into the ponds when they are inundated, and enter Spring and Shady Creeks in accidental or planned discharges. These creeks are tributaries of the Middle and South Yuba Rivers, which are already listed as impaired due to mercury contamination under Section 303(d) of the Clean Water Act.

An additional potentially significant impact is the potential for significantly altering the pH of local streams if a large volume of low-pH water is discharged from the mine during times of low stream flow to. At least one well within the one-mile radius of the mine has a low pH, in the 5.6 range, indicating low-pH groundwater exists in the area and could be intercepted by the mine. For comparison, the South Yuba River Citizens League has monitored Spring Creek at its confluence with the South Yuba River and the pH is reportedly in the more typical range of 7-8.

The impacts of low pH on aquatic ecosystems are significant and varied. Low pH is known to negatively impact the ability of vertebrates to maintain healthy calcium levels resulting in poor reproduction rates, weak bones and resulting in deformities. Also, low pH may result in release of soluble aluminum and iron from riparian soils, streambed sediments, or soil particles suspended in the water column, and may burn fish gills or cause other organ damage. Important macroinvertebrate food sources such as stoneflies and mayflies begin to die-off when pH drops below 6, and fish reproduction rates also begin to drop. The EIR must address alternatives or mitigations in the event that mine operations would require pumping large volumes of acidic water into adjacent creeks during low-flow periods.

In addition to the possible discharge of contaminants that may enter into aquatic ecosystems, there is the impact of sediment and erosion on streams. No baseline data for water quality (e.g., mineral content, pH, turbidity, electrical conductance) in the mine is publicly available, the EIR must include a thorough and complete water quality analysis before the mine begins operation and regular monitoring of water quality must occur throughout the life of the mine, with the data made available to the public. An example of such a study is the Rock Creek Mine Evaluation Adit Infiltration Pit Non-Degradation Analysis.[57]

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[56] *See, e.g.,* Doudoroff, P. and D.L. Shumway, *Dissolved oxygen requirements of freshwater fishes* 86 Food and Agriculture Organization of the United Nations (1986); Likens, G. E., AND M. B. Davis, *Post-glacial history of Mirror Lake and its watershed in New Hampshire U.S.A.: An initial report,* 19 Int. Ver. Theor. Angew. Limnol. Verh. 982 (1975); Chapman (1986); Barton, B.A. and Taylor, B.R., *Dissolved oxygen requirements for fish of the Peace, Athabasca and Slave River basins,* Northern River Basins Study, Alberta (1994); Truelson, R.L., *Water quality criteria for dissolved oxygen*, British Columbia's Ministry of Environment, Lands and Parks (1997).

[57] RC Resources, Inc., *Rock Creek Mine Evaluation Adit Infiltration Pit Non-Degradation Analysis* (2008).

Finally, further analysis is needed prior to permitting *any* discharge into creeks and streams, as the initial EIR failed to fully anticipate and mitigate impacts of such discharges, and the permits granted after the catastrophic dewatering incident occurred were based on incomplete and hastily prepared reports. Regardless of whether the applicant explicitly plans discharge into streams now, it is clear that this possibility is likely. The EIR should identify discharge as a potentially significant impact and characterize the settlement and infiltration ponds as a mitigation measure, then assess their likely effectiveness in this role.

The original permit did not allow any discharge into the creeks. All water removed from the mine was to be discharged into settling ponds and then into infiltration ponds where they would recharge the gravel aquifer. However, even before the major dewatering event of September 1995, Siskon had begun discharging water directly into Spring Creek in July 1995. In doing so, the mine violated the NPDES permit conditions originally established by the State Water Quality Resources Control Board. At the time of the dewatering event, the Regional Water Quality control Board allowed the water quality violations, while the State Board re-worked the permit to allow Siskon to continue discharging directly into Spring Creek.

The analysis of the potential impacts of direct discharge into creeks was performed by Jones & Stokes Associates in their 1996 report entitled *Environmental Analysis of Increased Discharge of Groundwater from San Juan Ridge Mine to Spring and Shady Creeks*.[58] The report was necessitated by the unanticipated and dramatic inundation of mine tunnels, and subsequent increased rates of pumping and discharge, and was thus completed in haste. The report did not take into account existing information about stream condition and did not assess impacts to rare and sensitive species known to occur in the streams.

The Jones and Stokes report looked at only three elements: stream morphological conditions, rainbow trout populations, and macroinvertebrates. The report did not assess impacts to the full range of rare and sensitive species that might be affected. Furthermore, the report failed to assess impacts to Shady Creek. The reasons given for this omission were that the creek lacks rainbow trout and there was inadequate data.

The geomorphic analysis was limited in both time and space. Measurements were only made in the upper reaches of the two streams, with no measurements in the lower reaches, which are developed in granitic rather than metasediment substrate. Observations were limited to a brief two-day period in late March – summer baseflow conditions when groundwater inflows would likely have been much lower would have provided a very different perspective on the potential effects of proposed deliveries from the mine on channel geometry, and riparian and aquatic habitat. In addition, there was no recognition of the effects of continuously elevated flows on riparian vegetation or on

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[58] Jones & Stokes Associates, Inc., *Environmental Analysis of Increased Discharge of Groundwater from San Juan Ridge Mine to Spring and Shady Creeks* (1996).

critical life stages of amphibians, fish, and other aquatic biota. Thermal effects of pond discharges and increased turbidity persistence were similarly ignored.

Implementation of a monitoring program prior to re-opening the mine would address these analytical deficiencies and provide a sound basis for developing effective mitigation measures and assessing changes in conditions once the mine is in operation. Key components would include: 1) Baseline flow, temperature and turbidity monitoring using continuous-recording data loggers; 2) Baseline manual measurements of suspended-sediment and bedload at different flow levels, particularly high flows; and 3) Stream walks and observations to document the extent and magnitude of sediment scour and deposition along the entire length of the two channels.

Macroinvertebrates and rainbow trout were the only biotic indicator species considered in the study, despite the presence of suitable and even occupied habitat for other species including rare, threatened and possibly endangered species. The streams affected by the proposed project include populations of foothill yellow-legged frogs, a California species of special concern. Significant studies by researchers from UC Davis and other institutions have studied this species on both Spring and Shady Creeks. Throughout their life cycle, foothill yellow-legged frogs area highly dependent on stream conditions including temperature and flow variations. Increased flows can dislodge egg masses and transport juveniles downstream, and cold temperatures can delay development. Any analysis of impacts of discharge should include assessment of impacts to these populations, as well as assessment of potentially suitable habitat for the California red-legged frog in the Grizzly Creek watershed. The new EIR should not rely on the outdated analyses in this 17-year old report as the basis for determining if groundwater pumped from the mine may be safely discharged directly into these streams.

Lastly, the Jones and Stokes report and documents prepared by the San Juan Mine Corporation mischaracterize stream condition, stressing the degraded nature of the hydraulic diggings environment the streams influenced by the mine property. The Jones and Stokes Report describes both Spring Creek and Shady Creek as "highly disturbed systems."[59] Although some of these streams contain high sediment loads and are not pristine, many reaches are considered to be in good condition.

The Yuba Watershed Institute's watershed assessment associated with their cooperative agreement with Bureau of Land Management found that Spring and Grizzly Creeks are both in surprisingly good condition:

> Overall, Grizzly and Spring Creeks are very similar in health and ecological condition to the Humbug Canyon control watershed. This is a surprising finding, given the extensive road networks, widespread historic and on-going logging, and widespread (although rural), human settlement. This finding may reflect the condition of the relatively undisturbed riparian zone along both of these streams.

[59] Jones and Stokes, at 16.

> Although their watersheds are significantly altered, the riparian zones along these streams closely resemble control conditions. [60]

Grizzly Creek and Spring Creek have correspondingly intact populations of macroinvertebrates suggesting that these streams are of relatively good health. Shady Creek and Spring Creek have persistent populations of Foothill yellow-legged frog as shown by studies contracted by State Parks.[61] Both Spring and Grizzly Creek have areas where riparian vegetation has old-growth forest characteristics. The new EIR should not rely upon the Jones and Stokes report, but should be based on new watershed assessments.

Finally, dewatering and discharge of water in the mine now may have much greater potential for significant impacts due to possible contaminants in the water. The initial phase of dewatering will remove water that has been in the old mine tunnel for many years. Pollutants may have concentrated in the water over time. The EIR should assess how to minimize damage to Spring and Shady Creeks and to wetlands during this initial dewatering phase.

A last issue that must be addressed is whether any of the affected streams or rivers may be navigable as a matter of law, thus triggering additional legal obligations. The history of past logging and other use of waterways may make one or more of the affected waterways navigable. The EIR should address this issue, based on historic information.

The EIR should assess potential impacts to these streams based on the available data concerning the condition of the affected streams. The Jones and Stokes report did not provide an accurate assessment of these streams. The report stated that because of the "existing [highly disturbed] conditions" nine (9) million gallons of water per day could be released into Spring and Shady Creeks. [62] This conclusion was drawn without full stream surveys or watershed assessments, and without identifying the rare, threatened and endangered species that may depend on affected creeks.

The EIR should be based on detailed analysis of potential impacts to creeks, including all relevant and available scientific information, and in light of the various legal obligations to protect water quality and quantity.

5. Potentially significant impacts of erosion and sedimentation must be assessed

The proposed mine involves numerous soil-disturbing activities that have the potential to cause further erosion and sedimentation in this already disturbed and highly vulnerable

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[60] Inimim Forest Timber Harvest Implementation Plan, 1996, Prepared by Yuba Watershed Institute, Timber Framer's Guild of North America, and Bureau of Land Management, at 5.

[61] *See, e.g.,* Yarnell, S., Larsen, E., Mount, J. , *Foothill Yellow-legged Frog Population Data and Fluvial Geomorphic Data for Spring and Shady Creeks,* California Department of Parks and Recreation (1998); Yarnell, S., Larsen, E., Mount, J. , *Foothill Yellow-legged Frog population data and fluvial geomorphic data for Spring, Shady and Humbug Creeks; Nevada County, CA.*, California Department of Parks and Recreation (1999); Yarnell, S., Larsen, E., *Foothill Yellow-legged Frog Population data for selected tributaries of the South Yuba River*, California Department of Parks and Recreation (2000).

[62] Jones and Stokes, at 16.

landscape. The historic hydraulic diggings are characterized by large tracts of exposed gravels and soils with intermittent bushes and pine trees, and with soil crusts that provide only a minimum of protection from erosion. Soil disturbance could eliminate what little protection against erosion has developed on these sites. These significant impacts should be evaluated in light of the already significant background levels of erosion and sediment production at these sites.

Since the 1850s, the exposed bluffs associated with the diggings have been an extensive source of sediment into both Spring and Shady Creeks. The EIR should identify locations of particularly erosive soils so that these can be avoided.

In addition, the EIR should demonstrate an understanding that recently-disturbed gravels possess very different qualities than the biological soil crusts present on the site that have developed over more than 100 years, particularly in terms of the potential of recently-disturbed sites to contribute to erosion and sediment loading.

Throughout the project area, unique soil crusts have developed over the 130-140 years that have passed since hydraulic mines were active. These soil crusts represent an interim stage in recovery of the site. While the development of these crusts may not be ecologically preferable to a fully reclaimed site, they are significantly preferable to the highly erosive properties of soils exposed to extreme soil disturbance that would be caused by the proposed mining. The EIR should evaluate impacts to these soil crusts, and impacts of removing these crusts on erosion and sedimentation of streams.

Biological soil crusts (also known as cryptobiotic, cryptogamic, and microbiotic soil crusts) are an intimate, symbiotic association of cyanobacteria, algae, microfungi, lichens, and bryophytes in various proportions that live within the upper few millimeters of soil and bind these particles together. Environmentally unique populations are found throughout the world growing in stressed environments, desserts, and dry arctic regions. In dry regions, they can cover 70% of all living ground cover.

Hydraulic mining in the Sierra Nevada represents what is likely the largest soil-removing event in the Sierra since the last ice age. The role of these soil crusts in this environment is critical to the preservation of soil moisture and nutrient creation and retention as the foundation for creating healthy soil communities capable of supporting larger plants and trees. Without active soil crusts, soil particles become loose and subject to wind and water erosion, removing valuable nutrients from marginal soils and significantly slowing the soil building.

Establishment of biological soil crusts is the first step in the successional cycle that leads to restoration. Cyanobacteria (e.g. *Microcoleus vaginatus*) are the dominant photosynthetic constituent of BSC's[cite]. They are composed of long filaments bundled into groups surrounded by a sticky sheath. These organisms send fibers winding around soil particles to create a tiny net-like structure binding soil particles, creating pathways for water retention, nutrient transfer and resistance to wind and water erosion. The succession series from *Microcoleus* leads to single-celled cyanobacteria such as *Nostoc commune,* which are highly resistant to UV radiation and produce larger amounts of biologically available nutrient exudates that allow lichens and mosses to colonize.

Phycolichens (containing green algal photobionts) and cyanolichens (containing cyanobacterial photobionts) can then begin to thrive in a wide range of morphologies from plate-like squamulose (e. g. *Psora)* to erect, felt-like foliose species of lichen (e.g. *Aspicila hispida)* require the foundation provided by fibrous cyanobacteria. Among these mosses and lichens, seeds from vascular plants can germinate in the cracks and gap using the nutrients and moisture present. If these communities are mechanically disturbed without appropriate mitigation, the recovery time is very long.

The proposed mining project will result in the loss 162 or more acres of biological soil crusts, which has the potential to significantly alter the successional pathways that are facilitating vegetation recovery. While full reclamation of the site may be preferable, it is essential that the EIR analysis recognize that the extreme soil disturbance proposed by the applicant will create an entirely different environment that the one present today.

The removal/disruption of the biological soil crusts will also increase fugitive dust emissions both associated with project activities and independent of project activities. The loss of the biological soil crusts may result in changes in microhabitats and have subsequent impacts to sensitive flora and fauna.

Any additional disturbance to the Diggings site will most likely result in an increase in erosion and sediment deposition in the streams running through the site, as well as increased dust. Disturbance includes roads, construction, building of settling ponds, and creating mine tailing stockpiles on the land surface.

Both sources of and the resulting impacts of erosion be should be considered in the EIR. Known past impacts that should be evaluated include the point source discharge of mine waters into Spring Creek from 1995 to mine closure in 1997. The EIR should assess potential future and cumulative impacts based on the likelihood that further discharge would most likely be in the form of discharges to ephemeral channels and/or drainages that may have inadequate capacity to transport those volumes of water without erosion of channel beds and banks, which would further increase sediment delivery downstream, ultimately into the Yuba River system. Effects of normal dewatering operations and catastrophic dewatering scenarios must also be considered in the EIR when it addresses the potential project impacts on erosion and sedimentation.

Elevated sediment levels in creeks can directly impact wildlife by impacting gills or smothering them, and also indirectly by reducing suitable substrate for macroinvertebrates (aquatic insects), fish, and amphibians.[63] Further impacts to wildlife

[63] *See, e.g.* Argent, DG., Flebbe, PA. *Fine sediment effects on Brook Trout eggs in laboratory streams*, 39 J. Fish. Res. 253 (1999); Hartwell, H., Welsh, JR., Olivier, L.M., *Stream amphibians as indicators of ecosystem stress: a case study from California's redwoods.* 8 Ecol. Appl. (1998), 1118-1132; Province of British Columbia, Ministry of Environment, Lands and Parks, and Ministry of Forests, *Suspended sediment and fish habitat in central interior watersheds of British Columbia*. 7: 31 (1998); Hynes, H. B. N. *The ecology of running waters* (1970); Waters, T. F. *Sediment in Streams Sources, Biological Effects and Control*. Amer. Fish. Soc. Monograph 7 (1995); Wood, P. J., and Armitage, P. D. *Biological effects of fine sediment in the lotic environment* 21 Environ Manage., 203 (1997).

can occur if sediment contains contaminants such as mercury.[64] Sediment loading in creeks could also result in impacts to downstream water quality, including to the South Yuba River, Middle Yuba River, and Lake Engelbright. Finally, added sediment and erosion can result in an increase in turbidity, a regulated water quality property.

In sum, the potential of the proposed soil disturbing activities to result in erosion and sediment loading should be considered as a potentially significant impact in the EIR. Analysis should take into account the existing environment, including an understanding of the existing soil crusts and more erosive areas. The EIR should also address impacts of sediment loading and erosion in the context of cumulative impacts of the proposed project in combination with past mining and severe soil disturbing activities including hydraulic mining.

6. The adequacy and impacts of settlement and infiltration ponds should be assessed in full in the EIR.

The EIR should independently evaluate the effectiveness of the proposed settlement and infiltration ponds to: 1) contain the volume of water to be removed, even in storm conditions and in the event of catastrophic contact with underground, water-bearing features that cause the mine to be inundated suddenly; 2) recharge groundwater removed to the aquifer from which it was withdrawn; 3) recharge uncontaminated water and to avoid contamination of surface water and groundwater sources; and 4) be constructed and maintained in a manner that avoids secondary environmental harm by exposing wildlife to contaminants.

The EIR should assess the adequacy of the ponds in terms of volume, number and ability to effectively protect water quality. The Operations Plan and associated reports[65] indicate that up to 3.5 million gallons of water per day will be pumped to dewater the mine and maintain operations. This volume does not account for additional water that could be released should a water-bearing fault be exposed by mining operations. Further, the ponds are designed to provide a minimum 4-hour retention time and contain a 24-hour, 100-year storm event. In light of recent record-breaking weather events and global climate change, the Operations Plan may need to reconsider the definition of a 100-year storm. Nevada City has had three years in the past twenty in which the yearly precipitation was approximately 145% to 180% of normal.

In addition, the EIR should specify when ponds will be built, and how phasing of construction will ensure that sufficient ponds exist at the time water is pumped out of the tunnel such that all of the water that is removed from the mine can be contained. The EIR should make clear whether the full layout of ponds must be provided for the initial

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[64] United States Geological Survey, *D.A. Geochemical characterization of water, sediment, and biota affected by mercury contamination and acidic drainage from historical gold mining, Greenhorn Creek, Nevada County, California, 1999-2001.* Report 2004-5251 (2005); Jones, A.B., Rand, B., Slotton, D.G., *Mercury Effects, Sources and Control Measures. Special Report,* San Francisco Estuaries Institute (1996); United States Geological Survey: *Mercury, Methylmercury, and other constituents in sediment and water from seasonal and permanent wetlands in the Cache Creek settling basin and Yolo bypass, Yolo County, California, 2005-06* 2009-1182 (2009).

[65] *See, e.g.,* Luhdorff and Scalmanini.

dewatering discharge in order to reopen the mine. If not, the EIR should identify where water will the large volume of potentially polluted water will be discharged.

The EIR should also provide rigorous scientific analysis of the assertion that water in infiltration ponds will find its way to the affected aquifers or surface water to which the water removed from the ground may be related. This analysis should include a water budget analysis.

Further, the quality of water removed from the mine and the effects of storing, infiltrating and discharging this water into ponds built on abandoned hydraulic mine areas should be evaluated in the EIR. The EIR should assess whether these waters would meet state and federal water quality standards for groundwater and surface water, including standards for turbidity and concentrations of chemical contaminants (e.g., nitrates, metals, petrochemicals, mercury). The EIR must address how mining-related pollutants and naturally occurring, potentially, toxic constituents will be removed before water is infiltrated or discharged. The Operations Plan does not identify a treatment facility other than ponds as part of the operation. The method by which contaminants will be removed from water before it is released and the potential effectiveness of the treatment facility should be described and assessed in the EIR.

Finally, the EIR should recognize that the construction, use, and post-project desiccation of the ponds themselves have the potential for environmental impacts. The Operations Plan proposes an additional 10-12 ponds be excavated during the life of the operation. The EIR should clearly identify the location and number of ponds and the method and phasing of pond construction, including the relationship to historical tailing piles and sensitive wildlife habitats and species, where the excavated soil/gravels will be disposed of, and how ponded waters will be prevented from overflowing during rain events. Pond operations should be clearly described in a manner that is understandable to the lay reader.

In sum, the EIR must address both the capacity of the settling and infiltration ponds to mitigate project impacts, as well as the potential of the ponds to cause negative impacts.

7. The project may have significant impacts on rare, threatened, and endangered species known to occur within the project area.

The EIR must provide an analysis of potentially significant impacts to plant and animal species and include mitigation of any significant impacts. This analysis must be based on high-quality, current information.

The application for the proposed mine states, "[t]he use of the property by wildlife is minimal due to the absence of vegetative cover for food and protection." This contention is incorrect and is indicative of the applicant's failure to conduct required surveys and assessments that would make clear that there are numerous species that rely on the project site for habitat, as well as numerous adjacent and downstream habitats that would be severely impacted by the proposed mine.

A new comprehensive field survey and analysis of impacts to local plant and wildlife species must be performed prior to analysis of impacts in an EIR. Past analyses of the property failed to identify potentially significant impacts to some sensitive plant and wildlife species. The previous EIR likewise lacked suitable mitigation measures for the potentially significant impacts to rare, sensitive, and endangered species. Further, almost 20 years have passed since the prior, inadequate analyses were performed. This is a crucial first step in understanding the magnitude of impacts the proposed project may have on plants and animals. Qualified personnel should conduct full biological ground surveys and assessments[66] during the CEQA stage of project review to identify sensitive species occurrences, evaluate risks to sensitive species and habitats and to provide mitigation measures. Surveys should be conducted during the appropriate phenological phase for plants, and according to established protocols for wildlife species.

A number of rare or sensitive plant and animal species are likely or known to occur in the direct vicinity of the proposed mine. In addition, the mine property and surrounding area contain habitat for rare and sensitive species that may be subject to direct or indirect impacts of mining operations. The EIR should consider the full range of threats to affected plant and animal populations. Threats to individuals and populations of rare, threatened, and endangered species include impacts on hydrology that may affect downstream species including foothill yellow-legged frog, Western pond turtle, and California red-legged frog; impacts from the introduction of non-native species such as Scotch broom; impacts on the foraging habitat critical for sensitive species including the California spotted owl; impacts from noise on foraging patterns of species including California spotted owl and northern goshawk; impacts on migratory patterns of species that may be present, including Sierra Nevada red fox, sandhill crane, willow flycatcher, and local and migratory black-tailed deer herds; and impacts from the alteration of suitable habitat for sensitive species.

Providing a full biological assessment is particularly important due to the nearly 20 years that have passed since the last environmental assessment of the site was completed.[67] In that time, environmental conditions and species populations may have changed significantly. In addition, some of the changes in population health have caused a change in the legal protection for some species. For example, several species have been listed as threatened under the state and federal Endangered Species Acts that were not known to be endangered or threatened at the time of the last EIR.

A new biological assessment must be based on current data. This biological assessment should identify species that may be subject to both direct and indirect effects of this project. Analysis should include assessment of all past, present, and reasonably foreseeable impacts that may have cumulatively significant, negative impacts to flora and fauna affected by the project, and particularly to the rare species discussed in detail below.

Finally, because the Nevada County General Plan is out of date, and because Nevada County has not implemented the General Plan monitoring and mitigation plan, no

[66] Please refer to the California Department of Fish and Game 2001 guidelines.
[67] Welsh Engineering Science & Technology, Final EIR (1993).

countywide cumulative impacts analyses have been performed since the General Plan was adopted in 1995. Thus, particular attention should be paid to cumulative impacts of this project, but also the potential of cumulative impacts to result in loss of population viability or disappearance of species in the County as a whole.

Potential cumulative impacts to species include individual and interactive impacts of climate change; past, present, and future impacts of dewatering from this and other mines; impacts of private and public use of local groundwater; and impacts from past, present, foreseeable impacts on private and public lands, including nearby mining projects; and from increased population in the area.

In addition to assessing cumulative impacts, there is the potential for the proposed mine to result in a take of an individual of a species listed as threatened or endangered under the federal Endangered Species Act (ESA), or listed under the California Endangered Species Act (CESA), for which incidental take permits will need to be obtained (*see* Section VI, below). The EIR should also address the potential that regional impacts to rare species population could result in listing of new species under the ESA during the life of the project. Because the proposed project does not have a finite termination date, and may last as much as 60 years, analysis of cumulative impacts on that timeline should be assessed using robust modeling.

Thus, Nevada County should consider requiring the applicant to submit a habitat conservation plan detailing how to avoid impacts not only to the species listed under the State and Federal ESA, but also to the other rare and sensitive species that are not now listed under the ESA and CESA but which have the potential to be listed over the potential 60-year life of the project.

Descriptions of some known rare, threatened, and endangered species likely to affected by the proposed project follow.

a) Significant impacts to foothill yellow legged frog *(Rana boylii)* are likely.

The proposed mining and the accompanying removal and discharge of water poses risks of significant direct and indirect effects to known populations of foothill yellow-legged frog (*Rana boylii*) within creeks affected by the proposed project.

As yet, this species is not listed under the federal Endangered Species Act. A petition to list the species as endangered was filed by the Center for Biological Diversity in 2012.[68] In addition, the International Union for the Conservation of Nature (IUCN) has placed the foothill yellow-legged frog on its Red List of Threatened Species, defining its status as "near threatened," and the population trend to be "decreasing." [69]

[68] The Center for Biological Diversity, *Petition To List 53 Amphibians And Reptiles In The United States As Threatened Or Endangered Species Under The Endangered Species Act* (2012) (Including Foothill Yellow-legged Frog, *Rana boylii*).
[69] International Union for Conservation of Nature, 2012. *The IUCN Red List of Threatened Species. Version 2012.2*. <http://www.iucnredlist.org>.

The life history of *R. boylii* is tightly linked to the hydrologic cycle of cismontane California (Mediterranean climate west of the Sierra-Cascade crest): dry, hot summers and wet, cool winters. Critical for maintenance of viable long-term populations is that water in rivers and streams maintain a relatively predictable flow pattern. Two critical life-history stages of *R. boylii* are spawning, and tadpole growth and metamorphosis. The quality and abundance of spawning sites and tadpole rearing sites is dependent on adequate amounts of water in situ at temperatures reflecting the environmental factors that have guided the evolution of this species.

In 1994, the state of California commissioned an evaluation of the status of this and other amphibians which provided a great deal of information about population status of this species in California.[70] This report made management recommendations for the foothill yellow-legged frog. The report identified critical habitat features that enable sorting of loose substrate and separating sediment from rocks and gravel, and explained that because of this, "…particular attention should be paid to maintaining a flow regime that ensures the presence of suitable habitat for *R. boylii*."[71]

The report went on to state, "[m]anagement should avoid water releases that create excess flow and shear conditions during the time interval that egg masses and the more fragile younger larval stages are present."[72]

The proposed mining has the potential to have significant effects on instream flows in creeks that support known populations of foothill yellow-legged frogs, including Spring, and Shady creeks, and potential habitat for the foothill yellow-legged frog in Grizzly Creek. The proposed very high rate of water removal and subsequent discharge have the potential to affect flows in creeks by increasing and reducing flows in unpredictable ways that may not correlate with the timing of natural flow regimes. Water discharged into creeks is likely to create increased flows in seasons during which frog species' reproduction relies upon slow-moving water. During the years when the Siskon Mine was in operation in the 1990s, it discharged effluent directly into Spring Creek as well as into settling and infiltration ponds. Changes in flow regime due to the proposed mining operations may impact species dependent on normal in stream flows, and may also affect water temperatures. Effects may even include dewatering creeks, as well affecting the presence and location of seeps, springs and small pools and ponds in and around the proposed project area that provide seasonal or refugial habitat for this species.

Mining may cause other significant impacts to this species. Ashton, et al. explained that mining can have deleterious effects on egg masses and tadpoles, as well as disturbing postmetamorphic behavior patterns.[73] Further, tailings of abandoned mines and settling ponds can contain contaminants such as mercury, which was used historically in great

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[70] Jennings, M. R., and M. P. Hayes, *Amphibian and reptiles species of special concern in California,* California Department of Fish and Game (1994).
[71] *Id.*
[72] *Id.*
[73] Ashton, D.T., A.J. Lind and K.E. Schlick, *Foothill Yellow-legged Frog (Rana boylii) Natural History,* United States Forest Service: Pacific Southwest Research Station (1997).

quantities on the San Juan Ridge in the extraction of gold.[74] Mining activities likely contributed to the extirpation of yellow-legged frogs in Baja California, Mexico.[75] Much of the San Juan Ridge Mine property lies within historic hydraulic mining diggings where mercury was used and where other native contaminants may be released by mining activities.

In addition, road construction and soil disturbance have the potential to cause significant harm to populations of amphibians including the foothill yellow-legged frog.[76] Road construction in wetlands or that crosses streams is likely to harm frogs by causing increases in sedimentation during road building, road maintenance or road failures. Sediment can embed stream substrates and remove interstitial spaces used by frogs. Culverts that do not allow frogs to pass can also impact population connectivity.

In sum, the proposed project is likely to result in significant impacts to this already rare species. Potentially significant impacts may result from effects to instream flows; soil disturbance and erosion in the area near creeks; possible dewatering or reducing flows in creeks, seeps, and springs; as well as impacts due to direct damage caused by very high rates of discharge. These impacts must be assessed in an EIR, as well as the cumulative effects of past mining activities and other past, present, and foreseeable future actions that may affect populations or sub-populations of this species. Comprehensive surveys of amphibians in the affected creeks should be undertaken prior to commencing any mining activities at the project site.

b) Significant impacts to California red-legged frog *(Rana aurora draytonii; Rana draytonii)*, including a take of an individual, may result from the proposed project.

The proposed mining project is very likely to cause significant impacts to habitat that may be occupied by the California red-legged frog (*Rana aurora draytonii; Rana draytonii*).

The California red-legged frog (*R. draytonii*) is listed as threatened under the Federal Endangered Species Act.[77] In addition, the species has been placed on the IUCN Red List of Threatened Species, and is designated as "vulnerable." A recent determination of critical habited designated 1.6 million acres as critical habitat for the California red-legged frog (CRLF). This was the third designation in nine years, based on most relevant scientific research. This designation encompassed more than three times the habitat designated for the frog in 2006.

The only known population of California red-legged frogs in Nevada County is found at Sailor Flat, within three miles of the proposed San Juan Ridge Mine. Upland movements

[74] Olson, D.H. and Davis. R., *Conservation assessment for the Foothill Yellow-legged Frog (Rana boylii)*, United States Forest Service (2009).
[75] Welsh, H. H., JR. *An ecogeographic analysis of the herpetofauna of the Sierra San Pedro Ma´rtir Region, Baja California, with a contribution to the biogeography of the Baja California herpetofauna*. 46 Cal. Acad. Sci. 1 (1988).
[76] Davis and Olson (2009)
[77] United States Fish and Wildlife Service, *Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the California Red-Legged Frog* 75 (2010).

of *R. draytonii* of up to two miles between sightings have been documented. The dearth of CRLF populations reflects a number of known and hypothetical variables including habitat modification and elimination; anthropogenic hydrologic alterations; bullfrog (*Rana catesbeiana*) competition and predation; and fungal disease (*chytridiomycosis*), among other factors. However, other populations of this species are likely to exist both on private and public lands but have yet to be identified due to lack of private property accessibility or lack of state and federal agency resources to support searches for new populations on public lands.

As with the foothill yellow-legged frog, the life cycle of *R. draytonii* is tightly linked to the hydrologic cycle of cismontane California (Mediterranean climate west of the Sierra-Cascade crest): dry, hot summers and wet, cool winters. Maintenance of viable, long-term populations requires availability of water in slow moving streams and ponds, and relatively predictable flow patterns. The California red-legged frog is primarily a pond and slow-moving stream species, and thus water flow patterns, water temperature, water quality, riparian and pond-side vegetation cover and siltation patterns all may impact its life cycle stages. Adjacent upland habitat provides hibernation/estivation sites, foraging habitat and movement corridors between aquatic sites.

Impacts on CRLF would likely be similar to those on the foothill yellow-legged frog described in section (a) above. Dewatering and discharge of water from the mine may affect in stream flows in Spring or Grizzly creeks, which are located at higher elevations and thus more likely to provide habitat to CRLF populations. During seasons when water is moving slowly, radical increases in flow caused by discharge and potential radical decreases in flow caused by dewatering could result in significant disruption to the CRLF life cycle. Soil disturbance could result in displacement of sediment and toxins into streams, which may result in mortality of CRLF individuals. Perhaps the most tenuous life-history stages of *R. draytonii* are spawning and tadpole growth and metamorphosis. The quality and abundance of spawning sites and tadpole rearing sites is dependent on appropriate amounts of water in situ at temperatures reflecting the environmental factors that have guided the evolution of this species.

Because this species is threatened with extinction and may utilize habitat that is likely to be directly affected by the proposed mining project, significant effects to the species are possible, including a possible take of an individual or population of this species. The potential for significant effects must be evaluated in an EIR. Thorough surveys of all creeks and riparian habitat in and near the project area must be completed prior to analysis of effects to species in an EIR, as detection of this species would necessitate obtaining an incidental take permit from the US Fish and Wildlife Service as well as possible preparation of a Habitat Conservation Plan.

c) Significant impacts to localized Western pond turtle (*Actinemys marmorata; Clemmys marmorata)* populations are likely.

The proposed mine is likely to have negative impacts on the Western pond turtle that may lead to a listing of this species as endangered.

The species is not listed under the ESA, though it was an ESA Category 2 candidate species before this category was eliminated in 1995. The IUCN has placed the species on the Red List of Threatened Species, indicating that its status is vulnerable and that there are threats to its viability. Due to diminishing populations of the Western pond turtle, the Center for Biological Diversity has submitted a petition to list the Western pond turtle as endangered under the ESA.[78]

The Western pond turtle is found in permanent and intermittent waters of rivers, creeks, small lakes and ponds, marshes, irrigation ditches, and reservoirs.[79] It is sometimes found in brackish water. In a Northern California stream, deep large pools with logs, branches, or boulders were favored sites.[80] The turtle commonly basks on land, near or away from water.[81] The name "pond" turtle is something of a misnomer because this species more frequently lives in habitats characterized by actively moving water and spends a lot of time in terrestrial habitats.[82]

Terrestrial habitat may be just as important as aquatic habitat for this turtle.[83] In some populations, males utilize terrestrial habitat for some portion of 10 months annually, while females are on land during some part of every month because of nesting and overwintering activities.[84] The Western pond turtle usually nests on sandy banks near water or in fields or sunny spots up to a few hundred meters from water.[85] In San Luis Obispo County in Central California, females nested in open areas with little vegetative cover that were 6 to 80 meters (mean 28.2 meters)—and possibly up to 170 meters—from water at an elevation above creek beds of 0.5 to 17.5 meters.[86]

The San Juan Ridge Mine proposes several activities that could cause significant negative impacts to individual Western pond turtles and that could impact viability of local populations. Potential impacts to in stream flows in creeks, potential reduction of ponds, seeps and springs in and around the proposed project area will directly affect suitable, potentially occupied habitat for this species. There have been recent sightings of Western pond turtles in and around the project area.[87] In addition, the potential release of mercury and other toxins into settlement and infiltration ponds, which may be used by this species, is likely to cause harm to Western pond turtles exposed to these contaminants. Finally,

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[78] Center for Biological Diversity, *Petition To List 53 Amphibians And Reptiles In The United States As Threatened Or Endangered Species Under The Endangered Species Act* (2012).
[79] NatureServe.. *Explorer: An online encyclopedia of life* [web application]. 2011, *available at* http://www.natureserve.org/explorer.
[80] Bury, R.B.,. *Habits and home range of the Pacific pond turtle, Clemmys marmorata, in a stream community*. Ph.D. dissertation, (1972).
[81] Rathbun, G. B., N. J. Scott, T. G. Murphey. 2002. *Terrestrial habitat use by Pacific pond turtles in a Mediterranean climate* 47 Southwest. Nat. 225 (2002).
[82] Ernst, C.H. and J.E. Lovich, *Turtles of the United States and Canada* 827 (2nd ed. 2009).
[83] *Id.*
[84] Reese, D.A. and H.H. Welsh. *Use of Terrestrial Habitat by Western Pond Turtles, Clemmys marmorata: Implications for Management*. Conservation, Restoration, and Management of Tortoises and Turtles. 352 (1997), available at http://www.rsl.psw.fs.fed.us/projects/wild/reese/reese3.pdf.
[85] Storer, T.I. *A synopsis of the amphibia of California* 27 Pub. Zoo. 1 (1925); Nussbaum, R. A., Brodie, D. E., and Storm, R. M. *Amphibians and Reptiles of the Pacific Northwest*. 243 (1983).
[86] Rathbun et al. (2002).
[87] Liese Greensfielder, personal communication with Wendy Boes, July 15, 2012.

the increased road construction and traffic in and around the mining site is likely to kill some individual turtles.

Further, bullfrogs (*Rana catesbeiana*) are known predators of hatchling turtles. The expansion of both settling ponds and infiltration ponds could lead to bullfrog colonization, leading to greater hatchling mortality.

The potential impacts to this species must be addressed in an EIR.

d) Cumulative impacts to sandhill cranes and willow flycatcher could be significant.

There is a potential for cumulative significant impacts to migratory bird species including the greater sandhill crane (*Grus Canadensis tabida)* and the willow flycatcher (*Empidonax traillii)*, including a potential take of an individual of these species.

The greater sandhill crane is listed as threatened under the California Endangered Species Act. Flocks of sandhill cranes have been observed utilizing the proposed mine area in a stopover during the migratory season.[88] The cranes migrate over this region annually.

The willow flycatcher is listed as endangered under the California Endangered Species Act. The willow flycatcher is a neotropical migrant that summers in riparian deciduous shrub habitat generally dominated by willows in the United States and Canada, and winters in tropical and subtropical areas from southern Mexico to northern South America.[89] Willow flycatchers in the northern Sierra Nevada typically begin to arrive at their breeding grounds around June 1, and utilize patches of riparian vegetation during migratory stopovers.[90]

Both of these species utilize riparian and aquatic ecosystems, and the impacts to riparian and aquatic ecosystems described above may affect habitat utilized by these species in their migrations. Site disturbance could harm willows or other riparian vegetation in and around seeps and springs within the project area. Dewatering could impact native vegetation so as to reduce suitability of habitat for these migratory species. Further, impacts to individuals of the species could occur if individuals drank from water that contained toxins such as mercury.

The EIR should assess potential impacts to migratory bird patterns including the greater sandhill crane and the willow flycatcher, both at a project level and in a cumulative context, as well as the possible take of a listed species.

e) There may be cumulative, long-term impacts to survival of spring-run Chinook salmon, sturgeon, and steelhead

The proposed mining operations may result in sediment transport to local creeks and impacts to aquatic habitats that are tributaries to the South and Middle Yuba Rivers, which could result in the cumulative effect of damaging critical habitat or significant

[88] Bob Erickson, personal communication 2011, with Wendy Boes.
[89] Green, G. A., Bombay, H. L., and Morrison, M. L., *Conservation assessment of the Willow Flycatcher in the Sierra Nevada*, White Mountain Research Station (2003).
[90] Green et al. (2003).

potential habitat for these species. The Middle and South Yuba Rivers contain fish species that are listed as threatened under the Federal Endangered Species Act, including federally-listed threatened Central Valley spring-run Chinook salmon *(Oncorhynchus tshawytscha),* threatened California Central Valley steelhead (*Oncorhynchus mykiss),* and the threatened southern distinct population segment of North American green sturgeon *(Acipenser medirostris)***.**

Because these species are already threatened with extinction, the cumulative impacts of sediment within their habitat could result in contributing to the extinction of these species. This potentially significant cumulative impact must be addressed in the EIR, though impacts of the project alone are not likely to be significant in the short term.

The South Yuba River watershed above Engelbright Dam does not presently contain native anadromous fish species, such as Central Valley steelhead, or spring- and fall-run Chinook salmon species. However, the National Marine Fisheries Service has recently issued a Biological Opinion[91] for the Daguerre Point dam that indicates that fish passage above both dams may be necessary to prevent extinction of these listed anadromous fish species.

This biological opinion identifies negative impacts to anadromous fish habitat from past and present mining activities, sediment, and removal of riparian vegetation. In addition, the Biological Opinion indicates that past and present mining operations can result in the input of toxins including copper, zinc, cadmium, mercury, asbestos, nickel, chromium and lead into water used by fish species,[92] some of which are considered extremely toxic to salmonids.[93]

The proposed mining operations would involve possible discharge of water directly into creeks and also into ponds that feed Spring and Shady Creeks, tributaries of the South Yuba River, as well as Grizzly Creek, a tributary of the Middle Yuba River. The proposed mining project will involve displacing soil in abandoned mine areas likely to contain mercury. The operations would also inundate some of these soils with water pumped from the mine shaft which may contain other toxic metals including iron, manganese, copper, zinc, cadmium, asbestos, nickel, chromium and lead. This discharge is likely to contain sediment that is harmful to fish habitat, toxins that can be deadly or damaging to anadromous fish species, and may displace mercury that could find its way into the food chain. Each of these potential impacts may affect individuals of these salmonid species, particularly if they are reintroduced to the upper reaches of the Yuba River at some point in the potential 60-year life of this project.

[91] Unites States National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Biological Opinion for the U.S. Army Corps of Engineers' operation and maintenance of Englebright and Daguerre Point dams and Englebright Reservoir on the Yuba River* (Feb. 29, 2012).
[92] *Id.* at 112.
[93] *Id.* at 126.

Because these species are threatened with extinction, the loss of a few individuals could be part of a cumulatively significant impact to species viability. This potential must be addressed in the EIR.

f) There are potential cumulative impacts to the California spotted owl (*Strix occidentalis occidentalis*)

The California spotted owl is a USFWS Bird of Conservation Concern and a Region 5 USFS Sensitive Species. There is a known nesting pair in the vicinity of the project area that would be impacted by proposed mining activities. Surveys should be conducted for the species during the appropriate season.

Habitat for the California spotted owl tends to have structural components similar to old growth forests with large diameter trees, trees with cavities and broken tops, high tree density, a multi-layered canopy, high canopy cover, snags and downed logs. Five vegetation types provide spotted owl habitat in the Sierra Nevada: foothill riparian/hardwood, ponderosa pine/hardwood, mixed-conifer forest, red fir forest, and the east side pine forest. The mixed-conifer forest type is the predominant type used by spotted owls in the Sierra Nevada.

Potential threats to the species from the proposed project include, but are not limited to, disturbance to nesting and/or foraging from noise and/or human activity; deterrence to foraging due to artificial light during foraging times; impacts to prey species; and consumption of contaminated water or bioaccumulation of contaminants through consumption of prey. There is the potential for this species to also be impacted by other activities in the immediate area and throughout its range and must be assessed for potentially significant cumulative impacts in the EIR.

g) Potential cumulative impacts to northern goshawk (*Accipiter gentilis*)

The northern goshawk is a California Department of Fish and Game (CDFG) and USFWS Species of Special Concern and a Region 5 USFS Sensitive Species. There are recent sightings that are unconfirmed in the project area.

The northern goshawk inhabits deep, conifer-dominated mixed woodlands. The birds typically nest in mature to old-growth coniferous forest stands with open understories and moderate to high canopy closure. Breeding season begins in April. Incubation takes 36 to 41 days (young hatch during May and June) and fledging occurs about 45 days after that (around mid-August).,Young are independent by about 70 days (around mid-October) and are vulnerable until then. Threats to the species include development and construction of logging roads.

There are records of northern goshawk in the California Natural Diversity Database from Malakoff Diggins State Historic Park from 1980 and 1983. However, given the historic records and anecdotal records of local sightings, there is potential for this species to occur in the vicinity of the project site. Surveys should be conducted for the species during the nesting season.

Potential threats to the species from the proposed project include, but are not limited to, disturbance to nesting and/or foraging from noise and/or human activity and consumption of contaminated water or bioaccumulation of contaminants through consumption of prey. There is the potential for this species to also be impacted by other activities in both the immediate area, and through its range. The EIR must assess these potentially significant cumulative impacts.

h) Inundated bog-clubmoss (*Lycopodiella inundata*)

The proposed mining project is very likely to result in significant impacts to the viability of the inundated bog-clubmoss in California. One of only three known California occurrences of this species likely occurs within the proposed mine activity area.[94] Significant impacts to this species are likely if this occurrence is injured or extirpated by mining activities or indirectly due to dewatering impacts.

Inundated bog-clubmoss is listed as a California Native Plant Society (CNPS) Rank 2.2 species and a California State Ranking of S1 (critically imperiled).[95] Though this species has a broad distribution across the northern hemisphere, it is considered a species of concern many places where it occurs. The species is slow growing and reproduces vegetatively,[96] which makes it vulnerable to population declines due to injury. Inundated bog-clubmoss is hydrophyllic and requires specific hydrologic regimes, generally inundation during the winter.[97]

The water removal needed to operate the San Juan Ridge Mine is very likely to have significant effects on the habitat and hydrologic conditions that this plant requires. Water removal may cause gradual lowering of the water table as well as rapid dewatering if the mine tunnel contacts water-bearing faults during operations, impacts that must be assessed in an EIR. Further, occurrences of this species may be directly affected if ground-disturbing activities occur where the species is located.

In addition, introduction or increases of invasive species could adversely impact occurrences of this rare species. Given that there are only three occurrences of this species in California, the viability of this species is particularly at risk. The EIR should address all potential cumulative impacts that could affect all known occurrences and impacts to suitable habitat. This species may be particularly sensitive to the impacts of global warming and climate change and this should be addressed in the EIR's cumulative impacts analysis.

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[94] CNDDB, 2012.

[95] *See* California Native Plants Society, *The 6th Edition of the CNPS Inventory of Rare and Endangered Plants,* available at http://www.rareplants.cnps.org/glossary.html#staterank (CNPS defines S1 as "Critically Imperiled--Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province").

[96] Lockton, A.J. *Species account: Lycopodiella inundata*, 2012 Bot. Exch. Club & Soc. Brit. Isles, available at www.bsbi.org.uk.

[97] Rasmussen, K.K. and J.E. Lawesson, Lycopodiella inundata in British plant communities and reasons for its decline, (2002), available at http://scholar.googleusercontent.com/scholar?q=cache:gNxfccwsqsJ:scholar.google.com/+Lycopodiella+inundata&hl=en&as_sdt=0,45. Last viewed August 14, 2012.

i) Brownish beaked-rush (*Rhynchospora capitellata*)

Brownish beaked-rush is a CNPS list 2.2 species.[98] This species is known to occur in the vicinity of the proposed mine. There are only 19 occurrences known in California.[99]

This species is a perennial herb occurring in mesic conditions in lower and upper montane coniferous forest, including meadows, seeps, marshes and swamps.

Mesic areas on the proposed project site may provide suitable habitat for this species. A late season survey for the species should be conducted during the blooming period (July – August). Potential threats to the species from the proposed project include changes to local hydrology (dewatering), surface disturbance, and introduction or expansion of invasive plant species populations. There is the potential for significant impacts to this species based on the massive dewatering and ground disturbance that may occur during the proposed mining operations. It is critical that surveys be conducted during the proper phenological phase for this species so that the EIR can fully disclose direct, indirect and potential cumulative impacts to this species and its suitable habitat.

j) Butte County fritillary (*Fritillaria eastwoodiae*)

Butte County fritillary is a CNPS List 3.2 plant species.[100] This species is known to occur in the project vicinity.

This species is a perennial bulbiferous herb occurring on dry benches and slopes in chaparral, cismontane woodland, and openings in lower montane coniferous forest, usually in partial shade. The species sometimes occurs on serpentinite. It is endemic to California. Threats to the species throughout its range include logging, development, road maintenance, recreational activities, alteration of fire regimes (specifically long-term fire suppression), erosion, and non-native plants. Primary threats from the proposed project include ground disturbance that could destroy bulbs, and introduction or expansion of invasive plant species.

There are approximately 200 known occurrences of Butte County fritillary throughout northern California constituting two disjunct distributional ranges. A genetic study[101] of this taxon is currently assessing whether it warrants division into two separate taxa, which would increase the potential rarity of the species. Many of the known occurrences for the species are on private timberlands, necessitating a full discussion in the EIR of potential cumulative effects to the species and its continued viability.

k) Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*)

Brandegee's clarkia is a CNPS list 1B.2 species.[102] Suitable habitat for the species may exist on the project site in road cuts or other areas of exposed and/or rocky soil. This

[98] CNPS list 2.2 indicates that a species is rare, threatened, or endangered in California, but more common elsewhere; fairly endangered in California.
[99] CNDDB 2012.
[100] *I.e.,* Needs review; fairly endangered in California.
[101] Julie K. Nelson, Forest Botanist for the Shasta-Trinity National Forest. Personal Communication XXXX, 2012, with Wendy Boes,
[102] Rare, threatened, or endangered in California and elsewhere; fairly endangered in California.

species is an annual herb occurring in chaparral, cismontane woodland, and lower montane coniferous forest, often in road cuts. It is endemic to California. Threats to the species include road maintenance, fire suppression, weed control measures, and possibly erosion. Should the species occur onsite, potential threats from the proposed project would include direct disturbance and introduction or expansion of invasive plant species populations. Decreases in groundwater availability could result in habitat disturbance that could potentially lead to extirpation of this species occurrence.

l) Elongate copper moss (*Mielichhoferia elongata*)

Elongate copper moss is a CNPS List 2.2 bryophyte species.[103] This species of moss occurs on rock outcrops (primarily metamorphic) that are typically vernally mesic. An undated occurrence is reported in the California Natural Diversity Database (CNDDB)[104] from Shady Creek, between Nevada City and North San Juan, with the exact location unreported. Surveys for this and other sensitive bryophytes should be conducted during an appropriate season for identification on the proposed project site.

Because the species usually occurs in mesic areas, a potential threat from the proposed project is changes to local hydrology. Other threats may include increased dust levels, direct ground disturbance, or adjacent disturbance or vegetation removal that increases solar radiation and/or decreases humidity within the moss's microhabitat. In addition, this species could be particularly sensitive to the impacts of global warming and climate change. These direct, indirect, and cumulative impacts should be addressed in the EIR. Biologists qualified to identify bryophytes and survey for them should perform the surveys for this species, so that impacts to the species can be adequately assessed.

8. Impacts to public lands and recreation must be assessed in the EIR.

The mine property is located adjacent to or will affect nearby Bureau of Land Management, State Park, and Forest Service lands. Noise, dust, water quality, possible dewatering of creeks and wetlands, traffic, and mine vent holes all have the potential to have a serious impact on recreational uses of adjacent lands, as well as the safety of people who accidentally wander onto the mine property. Specifically, many local residents access BLM lands, and the 'Inimim forest in particular, for walking, cranberry gathering, OHV use, bicycling, recreational gold mining, and other activities. In addition, thousands of visitors enjoy the South Yuba State Park, which lies directly downstream from the proposed mine. Visitors to the Park hike in the forest above the Park. Further, the proximity of the school and North Columbia Schoolhouse Cultural Center to the project site means that children and others hiking nearby could wander onto the property. In sum, public lands and recreational uses surround the property, and the mining activities have the potential to have significant affects on the enjoyment and safety of nearby recreational uses.

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[103] Rare, threatened, or endangered in California, but more common elsewhere; fairly endangered in California.

[104] California Department of Fish and Game, *California Natural Diversity Database* (2012), available at http://www.dfg.ca.gov/biogeodata/cnddb/.

9. Transportation impacts should be assessed in the EIR.

These cumulative transportation impacts of the proposed project have the potential to be significant, and must be addressed in an EIR.

The mine proposal involves transportation of significant quantities of dynamite, ammonium nitrate, and diesel fuel, which represent threats to transportation safety. The EIR must disclose the routes through which materials will be transported, frequency of transport of various materials, and relative risks to affected communities.

Further, these materials would pass very near and on roads that pass the Grizzly Hill School, located less than ¼ mile away from the entrance to the site of the proposed mine. In addition, these extremely hazardous substances would be transported on roadways that pass within ¼ mile of numerous other schools in Nevada County, and that pass a number of urban and residential areas. Potential impacts to children in the event of an accident or spill must be evaluated in an EIR. In addition, impacts to other populations along the transportation route must be assessed.

As to the transportation of explosives and fuel, the transportation impacts to be evaluated include: 1) mapping and identifying the route of trucks and number of trips per day; 2) identifying all residential areas and urban populations through which these trucks will pass; 3) identifying all schools near which the trucks will pass; and 4) evaluating impacts to each of these populations.

Finally, impacts of employee traffic must be assessed. The number of new employees estimated by the San Juan Mining Corporation is between 78 and 92. This represents a potential total of some 66 employees making two one-way trips to the mine every day (assuming that only 71% of the 92 employees will be working during any 24-hour period). These automobile trips are likely to produce dust and carbon monoxide fumes, and may result in liberating arsenic and mercury into the air. In addition, for several sensitive species identified to occur within the project area, road mortality is considered to be a significant threat to viability. This is the case for the Western pond turtle and a number of the frog species identified. Finally, the vehicles used to arrive at the mine site as well as vehicles used in the mining process all have the potential to transport invasive species to the project area and distribute them across the affected area. Analysis must include assessment of cumulative impacts to and from additional traffic in the project area due to increased population since the last EIR was prepared

10. Negative impacts to air quality may impact human health

The impacts of the mine on air quality may have a significant and negative impact on human health, including impacts to children located at the school that lies within ¼ mile of the proposed mine site. These potential impacts must be evaluated in an EIR.

a) The EIR should assess the potential impacts of fugitive dust emissions

Fugitive dust emissions will occur during the entire life of the project, and the impacts of such dust on human health should be evaluated in the EIR, particularly given the proximity of the project to a public school.. The health effects of particulate matter (including PM10) on human respiratory systems has been well documented.[105] Dust represents a potentially significant impact on human health.

The sources of dust are varied, and should be identified in the air quality assessment within the EIR. First, dust will be created by mining activities, creation of settlement ponds, when tailings are moved, during road re-construction, as well as during the operation of the mine. Fugitive dust emissions are also likely from vehicles traveling to and from the project site as one of the access roads, Jackass Flats Road, is a dirt road. Further, following mining activities, the potential for wind and erosion to continue to produce excessive dust must be assessed. There is no description in the operation or reclamation plan as to how this will be prevented.

Environmental factors that impact levels of dust should also be assessed. The potential for fugitive dust emissions to be caused by the effect of wind erosion on mined material should be assessed in the EIR. The potential for fugitive dust emissions varies seasonally. The EIR should address this variability using the most precise local weather data available.

The potential for lowering the groundwater table, both through the life of the project and beyond, will result in reduced capacity for plant growth. There is a likelihood that this will result in decreased vegetative cover and increased dust emissions in addition to dust contributions from other project activities. This risk should be addressed in the EIR, and should also be considered in the context of cumulative impacts on climate.

Fugitive dust emissions will also vary depending on the size of area disturbed, type of equipment utilized, and timing and length of activity. The description of the proposed action should be expanded to identify all factors involved with the creation of fugitive dust emissions to accurately describe the impacts in the EIR. Fugitive dust from dried surfaces in the settling and infiltration ponds, including the old ponds from the 1990s must be evaluated, and samples taken from those abandoned ponds to see what toxics are present.

b) Potential impacts of toxins in dust should be assessed in the EIR.

While dust can be harmful to human beings regardless of its chemical composition, airborne toxins can have particularly significant health impacts. The presence of various heavy metals and silicates in the soil makes possible impacts of dust far more significant, particularly in light of the proximity of the project to local residences, to the Cultural Center, and to Grizzly Hill School. In addition, there is a possibility that asbestos may be located in material removed from the mine tunnel, or in gravels utilized in road construction and reconstruction.

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[105] Samoli, E., et al. *Acute effects of air pollution on pediatric asthma exacerbation: Evidence of association and modification* 111 Env. Res. 418 (2011).

The EIR should analyze soils at all sites where disturbance will occur by taking core samples so that the appropriate mitigation can be established. The location of sample sites and test results should be clearly presented in the EIR so that local residents have information regarding the pollutants to which they may be exposed.

c) Local exhaust emissions from equipment and vehicles

Analysis for exhaust emissions should include all project activities that potentially could contribute to impacts to air quality including but not limited to vehicles, explosives, solvents, petrochemicals, lubricants, motorized equipment, etc. An accurate baseline should be determined so that the true changes in air quality can be assessed. The EIR should consider the seasonal fluctuations in air quality, and the increased potential impacts to human and ecosystem health during periods of poor air quality.

d) Increased dust adversely impacts plants capacity for photosynthesis

In addition to the effects dust may have on the human population, there may be significant effects to plant health resulting from dust generated by the proposed project and associated traffic. Dust has been shown to impact a plant's photosynthetic capacity (Farmer 1992). This impact should also be assessed in the EIR.

In sum, the incremental and cumulative impacts of this project and other reasonably foreseeable projects on air quality should be addressed in the EIR. Finally, the potential for reduced air quality to impact human health and the environment must be addressed in the EIR.

11. The proposed mining would have potentially significant noise impacts on local residents.

Relative to background noise levels, the proposed mining activities will likely have a significant effect on local residents, as well as on institutions including the North Columbia Schoolhouse Cultural Center, Grizzly Hill School and the Ananda College of Living Wisdom. These impacts must be assessed in an EIR.

The current mining proposal cites a noise study conducted by Brown-Buntin Associates, Inc., which was prepared for the 1993 EIR for the Siskon Mine project. The Brown-Buntin report based many of its conclusions on a study of ambient noise level measurements conducted by Wilson, Ihrig & Associates in 1988 and 1989.

Clearly, no environmental assessment of such a variable factor as noise can be based on reports that are now 19 and 24 years old. The area surrounding the proposed project is rural in nature and, in the absence of any other mining or industrial activities, enjoys very low ambient noise levels. These levels may even be lower now than they were during the Siskon mining project because many residents who formerly relied on noise-producing generators for power now have noiseless photovoltaic power for their energy source.

Key aspects of the Brown-Buntin report and the Noise section of the EIR were strongly disputed by SJRTA during the 1993 EIR hearings. Although the EIR was certified, the arguments of the SJRTA are still valid and must be addressed in any new noise assessments. These include:

- **Brown-Buntin's maps of "sensitive receptors,"** (that is, residences within earshot of the project) are missing dozens of residences. The maps submitted by Tim Callaway for his new project proposal are the same flawed maps submitted for the Siskon project. For example, neither of the two residences on "Upper Wepa Road" and none of the half-dozen residences on Sumi Road was included on the 1992 maps or on the current maps.
- **Intrusiveness of noise is not related just to its loudness, but to tone, frequency spectrum and other characteristics.** Yet the Brown-Buntin report did not take these factors into consideration. Rather, it only evaluated the anticipated increases in dBA from the Siskon mining operation to the dBA levels of the Nevada County Noise Element standards. Thus, the 1993 EIR concluded that, although mining operations would quite possibly be increasing ambient noise levels by up to 5 decibels at many residences, this increase was not significant, because the increased levels still fell within the 50-decibel daytime limit set by the County.

12. Safety for mine workers

The proposed re-opening of the San Juan Ridge Mine poses a number of safety concerns for miners, especially the underground crews, but also for our community. These potential impacts should be assessed in the EIR. In addition, the cost to our community and fire department of providing potential rescue operations, and resulting impacts on taxpayers, as well as the level of service provided by our all-volunteer fire department, should be assessed in the EIR.

Safety risks to mine workers include impacts of dust and toxins found in the material to be mined; tunnel safety due to instability of the cemented gravels in which the mine tunnel will be located; potential risk of inundation of the tunnel; hazards associated with explosives; as well as hazards due to mine and other heavy equipment. The Operations Plan downplays risks and glosses over the past history of problems. Unanticipated impacts, such hitting a water-bearing fracture, can result in an urgent health hazard that is not adequately addressed in past planning documents. For example, when this occurred during the past period of operation, millions of extra gallons of water had to be removed when an underground fault was exposed.

The EIR should address exposure to air- and water-borne pollutants in the mine tunnel. Air pollution and noise levels of diesel heavy equipment operating underground are a serious concern. As the mine progresses to the west works, the tunnel will be over a mile long, making ventilation and escape opportunities challenging. The ventilation fans and their placement are critical for noise control. The EIR should also address the silicosis potential with underground blasting and rock processing in a quartz riverine environment. The mine ventilation exhaust is also an issue for aboveground residents as well as underground mine workers.

Second, the instability of the mine tunnel and possible risks to mine workers should be addressed. The consolidated gravels and ancient riverbed into which the mine is excavated required extensive applications of ceiling bolts and shot-crete to stabilize the

rock fall potential. The mine has been flooded for many years and will likely be destabilized by the dewatering process, requiring extensive repairs.

Third, the risks to mine workers due to potential tunnel inundation should be addressed in the EIR. Finally, risks of explosives to human safety both for mine workers and others near the affected area should be assessed.

13. Impacts to archeological resources could be significant; high quality archeological evaluation is needed in order to avoid mercury displacement.

The proposed mining takes place in a landscape that contains a great deal of archeological information. This information is important both for an understanding of the historical realities of hydraulic mining, but also in order to identify possible sites of mercury contamination. The previous archeological studies for the original EIR are not adequate, and this must be corrected in the next EIR.

The previous archaeological studies follow a typical pattern, although Mariah & Associates analysis was superior to the others. These analyses took the basic stance that hydraulic mining probably washed most of the sites downstream and, with the exception of Mariah, failed to see the whole excavation as an industrial undertaking with contributing elements.

The most meaningful way to record the archaeology of the "North Columbia Diggings" is to record the extent of the mine and its ancillary features such as water conveyance systems, reservoirs, sluice channels, tailings deposits, roads, trails, etc. Archaeologist Susan Lindstrom did this at the nearby Malakoff Mine and in doing so raised the bar considerably. Lindstrom states, "Being one of the important artifactual indices of site, mining related topography deserves greater in-depth study by historical archaeologists who are uniquely qualified to address those spatial and temporal questions pertaining to the design, structure, position and persistence of human works. "[106]

Mariah & Associates made this comment on Lindstrom's work:

> Lindstrom's report represents a state-of-the-art discussion of the preservation concerns surrounding a large placer mining activity area. Not only did her work involve an intensive pedestrian survey of the hydraulic pit and adjacent areas, but the features identified were discussed as functioning parts of a complex industrial process, as opposed to isolated historic artifacts within an undecipherable industrial landscape. This holistic view adopted by Lindstrom (1990) should be considered a model for future cultural resources investigations of comparable placer mining activity areas.[107]

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[106] Lindstrom, S., *A Historic Sites Archaeological Survey of the Main Hydraulic Pit Basin Malakoff Diggins State Historic Park North Bloomfield, Nevada County California,* State of California Department of Parks and Recreation (1990), at 58.

[107] Mariah & Associates (1992).

This kind of in-depth survey would be ideal, and would also go a long way toward enabling the applicant and County to identify and avoid areas where mercury concentration is likely to be higher. Lindstrom's standards are becoming the goal for historical archaeologists addressing this kind of a site. A new Archaeological Study based on these premises would reflect the new thinking and therefore record more sites and features.

Some believe that historical archaeology is redundant because they think that what we need to know is already contained in the documentary record. This plays out both overtly and in more subtle and dismissive ways. In actual fact historical archaeology offers valuable perspectives.

> Archaeology certainly can provide insight into historical processes that written records simply do not provide. It provides access to the ways all people, not just a small group of literate people, organized their physical lives. If only the written records, rich and detailed as they are, are studied, then the conclusions will reflect only the story of a small minority of deviant, wealthy, white males, and little else. I do not think we want that for our national history; therefore, we need archaeologists to find what was left behind by everybody, for every conceivable reason. The *unintentional record* (italics mine) of people provides scholars with ways to determine the underlying reality of our history.[108]

In order to capture this valuable information, as well as to assist in identifying the possible location of dangerous substances, a detailed and accurate depiction of archeological resources must be completed prior to completion of the DEIR. The following are some of the known sites within the project area.

1) **The Hustler Family Site**

This archaeological site appears to be the one mentioned in existing archeological documents. If it is within the project's boundaries it should be recorded. On Doris Foley's 1972 sketch map of Columbia Hill, there is a Hustler house on the south side of the road just beyond the upper reservoir. The map is based on her recollections.

2) The Farrell Tunnel

The drainage tunnel mentioned in the existing study must be evaluated for historical significance as well as a possible location of mercury. The Mariah Study lists a "Drainage tunnel" as "Archaeological Isolate #23."[109] The last EIR makes no mention of this feature. This may be the 2,200' Farrell Tunnel that dumped into a tributary of Grizzly Creek.

Drain tunnels, and the areas below the exit, are known hot spots for mercury contamination. A drain tunnel was used to eliminate tailings from the work area and was

[108] Deetz, J., Introduction. *In Historical Archaeology in Global Perspective,* Smithsonian Institution Press. Washington, D.C. (1991).
[109] Mariyah, at 41.

essential to the operation of a productive hydraulic mine. In a typical hydraulic mine two monitors (water cannons) were used on a single face. One cut into soft areas in the face to bring down terraces of gravel while the other one swept gravel toward the sluice. The drain tunnel was located below the sluice where a monitor periodically moved tailings toward the drain tunnel. Sluices boxes, which can be hundreds of feet long, were routinely "charged" with quicksilver (mercury). The drain tunnel also functioned as a sluice. Drain tunnels were unique to the "northern mines"

A drain tunnel allowed the operators to work deeper and therefore closer to bedrock where the gravels were most productive. Many smaller mines failed because they couldn't afford a drain tunnel that would have created the necessary "fall." Just prior to the end of legal hydraulic mining in California, the Eureka Lake Company was planning a drain tunnel that would have dumped tailings into Spring Creek.

If this is the Farrell Tunnel (Mariah provides coordinates), it is much more than an isolate. "Historical features seldom occur in isolation. Rather, they are parts, complexes or feature systems that reflect a technological or other activity complex such as a mill or a mine."[110] Roads, railroad grades, ditches and trails are examples of linear features that are often recorded as sites.

The location of the "drainage ditch" should be more thoroughly examined. Where does it originate? Where does it exit? Drain tunnels, and the areas below the exit, are known hot spots for mercury contamination. If this is not the Farrell Tunnel then where is it? It is critical that the location of this tunnel be mapped and identified, in part because it is the likely location of mercury that presents a potential public health issue. The drain tunnel should be located and recorded in a new archaeological survey. Then it should be evaluated for mercury contamination.

14. The proposed project could contribute to cumulative impacts of greenhouse gases and climate change.

CEQA requires analysis of possible contributions of the project to cumulative impacts to global climate change. The project has the potential to contribute in a locally significant manner to the production of greenhouse gases.

Project activities may increase greenhouse gas emissions onsite. The use of fuels including up to 500,000 gallons of diesel as well as gasoline and propane, represent increases in greenhouse gasses that are likely to impact vegetation locally and that may contribute to global climate change. In addition, the traffic associated with employees of the mine is likely to contribute to greenhouse gas emissions.

Further, the project would use an enormous quantity of Portland Cement. While new methods of production may reduce greenhouse gasses produced in the future, currently

[110] Hardesty, D. and B. Little, *Assessing site significance: a guide for archaeologists and historians* (2000).

the production of Portland cement worldwide causes emission of 5- 6 percent of total man-made greenhouse gases.[111]

These factors combined with the impacts of dewatering on vegetation are likely to have significant impacts, potentially as a result of project activities, but more likely by contributing to cumulative effects. The effects to vegetation are likely to have cascading impacts on faunal and other biota both onsite and downstream. Reductions in vegetative cover could influence water quality by increases in erosion, heating of water temperatures in Shady, Spring and Grizzly Creeks, which support known occurrences of foothill yellow legged frog. Each of these possible impacts should be addressed in an EIR.

15. The project has the capacity to have substantially degrade the environment by the introduction, spread, and proliferation of invasive species

The activities associated with the proposed mining have the potential for both direct and indirect impacts on the spread and proliferation of invasive species that must be assessed in the EIR. Proposed mining activities will likely result in the introduction of additional invasive plant and animal species, and an increase in the abundance and distribution of existing occurrences.

There are several invasive species of particular concern that are found within the project area and likely to proliferate due to the intensive site disturbance and transportation proposed by the applicant. Invasive species known in and around the project area include invasive bullfrogs (*Lithobates catesbeianus)*; Scotch broom (*Cytisus scoparius);* yellow star thistle (*Centaurea solstitalis);* and medusahead (*Taeniatherum medusae-caput).*

Construction of settling and infiltration ponds will create habitat for invasive bullfrogs (*Lithobates catesbeianus)*. Bullfrogs are known from occurrences in ponds nearby (Liese Greensfelder, personal communication, 2012). Bullfrogs are known to occupy ponds, as well as perennial streams, and the project proposes to substantially increase suitable habitat. Bullfrogs have been identified as a threat to foothill yellow-legged frogs, California red-legged frogs, and Western pond turtles. Introduction of this species to the proposed project site would increase the risk of introduction into Spring, Grizzly and Shady Creeks in locations of known populations of foothill yellow-legged frog.

The local community has worked to control Scotch broom (*Cytisus scoparius)* with the intent of eradicating this plant from the local area. There are large occurrences of Scotch broom on the eastern portion of the project area that will migrate west without proper mitigation. Known infestations of yellow star thistle (*Centaurea solstitalis),* medusahead (*Taeniatherum medusae-caput)* inhabit portions of the project area. These species and other high ecological-impact species could be transported to new areas on machinery, vehicles and imported materials.

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[111] Kevin Bullis, *New Cement-Making Method Could Slash Carbon Emissions*, MIT Technology Review (2012) (discussing how new method could reduce emissions, and citing current rates of CO2 emission); this article can be found at http://www.technologyreview.com/news/427906/new-cement-making-method-could-slash-carbon-emissions/.

Invasive plant species impact native plant communities and biodiversity in several ways, including changes in plant community structure that result in changes in native species richness and abundance. The mechanisms responsible for these changes are often poorly understood due to the complex nature of interactions between species and the various trophic levels in a community (Levine et al. 2003). Some mechanisms for changes in communities include: 1) changes in the soil chemistry (salt accumulation, changes in nitrogen cycling, alleopathy), 2) changes in the soil biota; 3) changes in the soil moisture; 4) changes in site and food quality and quantity for other trophic levels; 5) increased competition for resources such as light and nutrients; and 6) changes in ecosystem processes, such as hydrologic regimes or fire regimes.

Invasive species are known to adversely impact biodiversity and ecological processes. As biological entities are not restricted by political boundaries, there is the potential for spread and impacts to adjacent lands.

The biological assessment should consider the potential increased risk of introduction of invasive species on machinery and vehicles and identify potential mitigation measures. The EIR should also analyze potential impacts of nonnative plant species known to pose ecological risks (see Cal-IPC's list at http://www.cal-ipc.org/) , including assessment of the potential impacts if these high risk may become established and proliferate. This analysis should include reference to the neighborhood's extensive work to eradicate invasive species, and should assess the potential for this project to reverse the positive effects of these efforts. Analysis should use as a baseline the very low levels of these invasive species in the vicinity of the applicant's property.

16. There is the potential for increased risk of wildfire that could result in significant effects to human beings.

The potential risks to human beings of increased fire risk are significant and must be assessed in an EIR. Potential impacts include the potential for dewatering to reduce the resilience and resistance of plant communities to fire; increased risk of ignition; and lack of available water for fighting fire locally.

Dewatering may have negative impacts on vegetation, including drying out and killing vegetation.[112] Dry and dead vegetation is more likely to burn once a fire is ignited. Vegetation that is already moisture-stressed is likely to be less resilient following fire.

The proposed mine re-opening also increases risk of fire ignition. The proposed increase in traffic and employees is likely to result in an increased risk of ignition of a wildfire. In the past 2 months, there have been three instances of wildfire ignition in the vicinity of the proposed mine, some of which have been attributed to a former mine employee.

Finally, if wells and other water sources are dewatered, less water will be available to fight fire locally. The fire department and CDF often utilize private water supplies in fighting fire, pumping directly out of water tanks or using fire hydrants or valves provided by property owners for this purpose. Private wells and the CDF and fire department wells are all relatively near the proposed mine, and thus are at risk of failure.

[112] USDA Forest Service, 2007. *Technical Guide to Managing Ground Water Resources.* FS-881.

17. The EIR should evaluate cumulative impacts to light.

The Operation Plan mentions that lights will be installed for safety and operations, but fails to identify where and how many light will be installed. Light has the potential to impact both sensitive wildlife species and humans. The amount of light to be installed should be clearly defined in the proposed action, and the changes from baseline conditions and the potential impacts to humans and other species should be analyzed in the EIR.

V. The proposed mine and EIR should be consistent with the General Plan, and cumulative impacts analysis must be rigorous.

The proposed re-opening of the San Juan Ridge Mine is inconsistent with the general plan as proposed, and these inconsistencies should be addressed in an EIR. Further, cumulative impacts analysis is particularly important because of the lack of recent, County-wide monitoring and planning.

Because Nevada County has failed to implement many of its own general plan policies and mitigation measures, it is imperative that the EIR for the proposed mine address cumulative impacts. More detailed technical studies/analyses and a more detailed mitigation program may be required.

For example, Nevada County has not adhered to its own mitigation and monitoring plan, and thus analysis of past impacts of this and other projects as well as future impacts of this project is severely hampered if not impossible. A mitigation monitoring program (MMP) is required by state law to insure that mitigation measures imposed on a project are carried out as intended. The MMP outlines specific steps to be taken by the project proponent to implement each measure and staff are assigned to check that each step is done correctly and completely. Because the County has failed to implement a mitigation monitoring program, the County has no way to know whether mitigation has been successful, and thus whether cumulative impacts of this and other projects may be significant.

Finally, the proposed re-opening of the San Juan Ridge Mine may simply be inconsistent with the General Plan, because the mine that is proposed removes so much water that it is an inherent conflict with other important uses including a school, medical clinic, agricultural uses, businesses, forest and timber resources, and residential uses. The mine involves a very large tunnel and thus requires removal of far too much water. The tunnel is located in cemented gravels and fractured bedrock, which are highly permeable and thus involve unpredictable and extensive impacts to the hydrologic regime.

The 1995 General Plan is structured around a few foundational themes, which include:

- Fostering a rural quality of life;
- Sustaining a quality environment;
- Development of a strong diversified, sustainable local economy; and

- Planned land use patterns will determine the level of public services appropriate to the character, economy and environment of each region.

Additionally, two of the supporting themes applicable to this Use Permit application include:

- Ensure the long-term quality of natural resource values at the same time ensuring the sustainability of agriculture, logging, and mining activities; and
- Minimize conflicts due to incompatible land uses.

The proposed heavy industrial mining project is fundamentally in conflict with the above planning themes and it will not enhance our "rural quality of life." This proposed project has directly conflicted with legitimate adjacent uses in the past, including causing dewatering and contamination of the well for the school and other residences. Further, this proposed mine threatens forest resources where the base zoning is "FOR."

The General Plan outlines a series of 15 planning principles. Of those 15 principles, seven (7) are directly relevant to the proposed Use Permit for the re-opening of the mine including:

- Avoidance of development in areas of extreme topography or unsuitable soil/geologic types.
- Avoidance of development in areas subject to flooding.
- Preservation of the natural and visual resources of the County.
- Provides space for parks, schools, public places at an accepted level-of-service and spaces for institutions of all types.
- Preserves the historic and architectural resources of the area.
- Prevents environmental degradation through control of noise, air pollution, disposal of wastes, grading, tree removal, and other adverse affects.
- Protects the health and welfare of the residents of the County.

The proposed heavy industrial mining project, as described by the applicant, is not consistent with the above planning principles. The mine has a track record of contaminating and dewatering other adjacent wells. Nevada County has identified health risks caused by this mine. The County Department of Public Health has prohibited the Grizzly Hill School from allowing the school's well water to be consumed, and has warned many residents of contaminants in their water supply due to the past effects of this mine.[113] Additionally, the proposed mining project and associated traffic is likely to increase the level of local air pollution, including ozone. Air pollutants have been linked to asthma and numerous respiratory diseases.

Allowing the mine to proceed and cause degradation to air quality and increased risk in exposure to respiratory ailments is directly inconsistent with the principle to "Protect the health and welfare of the residents of the County."

The following are specific General Plan elements and policies that must be followed in developing an EIR for the proposed project and in evaluating whether the project is

[113] Nevada County Department of Public Health, Letter of [insert date].

consistent with the General Plan, and should be allowed to go forward. These policies are excerpted from the Nevada County General Plan, Volume I, 1995.

1. The proposed mine is inconsistent with the General Plan Land Use Policies and zoning designation.

The land use element of the General Plan contains policies that have as their core purpose the General Plan theme of "Fostering a rural quality of life." The General Plan's primary tool for avoiding conflicts between land uses is zoning. Zoning, along with General Plan policies, is intended to avoid allowing planning uses within the same area that are inherently in conflict.

The General Plan has explicit direction restricting placement of industrial uses. Policy 1.20 explicitly requires that "where possible, industrial uses should not be placed adjacent to public facilities or institutional uses;" yet the applicant proposes a significant industrial use located adjacent to a public school, to our Cultural Center that produces outdoor events that need a quiet environment, and near our medical clinic that relies upon a good supply of clean and abundant water. Further, Policy 1.1 requires that within the rural regions, "growth is limited to those types and densities of development which are consistent with the open, rural lifestyle, pastoral character and natural setting and surrounding land use patterns which exists in these areas."

The project site is designated as "Forestry" (FOR), a designation that is intended to support a "rural" atmosphere. Specifically, the FOR designation is a "Rural District" intended to provide "for the protection, production, and management of timber and timber support uses" including "low intensity recreational uses and open space."[114] This designation is intended to result in conservation of forest resources. Residential uses are considered consistent with the Forestry zoning designation. The affected property is also located in an area that supports a variety of zoning designations, including AG, TPZ, R, and a PD.

The Plan provides a zoning overlay that places the property in an "ME" district. Granting the application for a Use Permit would allow a heavy industrial mining use on this site, which theoretically is consistent with this zoning overlay, but is in truth completely inconsistent with other uses. While many mines could operate consistent with this paradoxical zoning by limiting impacts, this heavy industrial mining use is not consistent with the overall intent of the "rural region" and forestry land-use designation.

The proposed mine is far too large in scale and water usage to be consistent with adjacent and nearby land-use designations that support forest, agricultural, and rural residential uses. Projected peak employment would involve round trips by the 48 to 90 employees of the mine on a daily basis, involves transportation of extremely hazardous materials, and is likely to result in dewatering of wells and available water needed to support surrounding forest vegetation. This use is clearly inconsistent with maintaining the

[114] Zoning Districts, Nevada County General Plan, at [cite].

timber resource, and is also inconsistent with the rural residential uses surrounding the proposed mine. The General Plan aims to protect ores and mineral resources by separating them from other uses, to allow mining to proceed. However, the land uses adjacent to the area proposed for mining include uses that are simply inconsistent with the proposed mine, and they predate the mine.

In sum, it does not appear that the proposed mine could be operated in a manner that is consistent with the uses that surround the proposed mine. This project should be rejected due to inconsistency with the land-use designation and potentially significant impacts on human well-being, forest environments, and the natural environment more generally, as described above. The EIR should address this inconsistency and assess potentially significant impacts, including cumulative impacts that have not been addressed in the outdated General Plan, which was prepared prior to the existence of some of these uses.

2. The proposed mine is not consistent with the General Plan's Economic Policies.

The proposed mine could have vast impacts on the economic well being of the San Juan Ridge, and could have an economic impact on businesses and tax receipts for a broader segment of the Nevada County economy.

The San Juan Ridge area has a diverse and thriving economy comprised of over 100 small- to medium-size businesses with estimated aggregate revenue of approximately $15-20,000,000. In addition, a number of owners of businesses that serve greater Nevada County live on the Ridge, and depend on water wells that could be affected by they mine, which in turn could impact whether these businesses remain in Nevada County.

Beyond the small town center of North San Juan, the majority of economic activity is found along the business corridor running the length of Tyler Foote Road from the intersection of Highway 49 and ending just below Tyler Foote Crossing Road. This corridor roughly parallels the mine tunnel and property. The proposed mine thus would place many wells for Ridge businesses at risk.

Central to the Ridge economy are five large employers clustered near the intersection of Sages Rd and Tyler Foote Crossing Road. Together, Ananda Village (housing over 37 businesses), RCD Engineering, Extasia, Inc., the Sierra Family Medical Clinic, as well as the Grizzly Hill School located farther up Tyler Foote, generate over $12 million in gross revenue.

Two of the businesses border the proposed mine. Ananda Village and RCD Engineering are within 1/8 of a mile of the proposed mine. Based on the impacts of the 1995 well dewatering, wells for these businesses are at high risk dewatering by the mine operations. Because these businesses lack alternate water supplies, they would be forced to close without water.

In addition, the Grizzly Hill School is a major employer that is located adjacent to the proposed mine. The North Columbia Schoolhouse Cultural Center is also located adjacent to the proposed mine.

Because the proposed mine is likely to cause dewatering of wells and a reduction in water supply, and is so near to most of the businesses of the upper San Juan Ridge, this project is likely to have a significant effect on the economic health and well-being of the San Juan Ridge, and to have a significant impact on commercial and private property tax revenues for Nevada County.

Yet while the San Juan Ridge economy has grown over the past decades since the San Juan Ridge mine first opened and since the General Plan was adopted, the County has done little to understand or foster this economic development. The Nevada County General Plan has a comprehensive strategy and set of policies for encouraging economic development in Nevada County, a strategy that simply has not been employed in Nevada County since the adoption of the passage of the General Plan, and has not been applied to the San Juan Ridge. This strategy includes focus on retaining existing businesses as well as attracting new businesses, and maintaining a balance between residential uses and business uses in Nevada County.

Nevada County has been very helpful in aiding the lower San Juan Ridge by passing a General Plan Amendment that authorized the North San Juan Plan. This plan was a groundbreaking plan which made critical changes needed for sustainable business development in the town of North San Juan, which serves the lower San Juan Ridge. The result has been the addition of new and successful North San Juan businesses over the past few years, even in difficult economic times. However, the small parcel sizes within North San Juan make the available properties unsuitable for larger businesses and other public services that require parking.

The past reluctance of Nevada County to acknowledge the old Cherokee and North Columbia town sites as existing business centers, coupled with the lack of implementation of General Plan policies related to business retention and economic analysis, has resulted in an incomplete understanding of economic health in this area.

Prior to allowing the proposed mine or other land uses that could have significant, negative impacts on the economic health of this region, Nevada County should conduct an inventory of existing businesses on the San Juan Ridge and develop a program to retain those existing businesses, consistent with the above General Plan policies. The EIR should address the County's failure to achieve its economic goals and policies in a sustainable manner. The EIR should also assess the socio-economic impacts associated with proposed mining operations consistent with Policy 17.10.

Further, the EIR should perform an economic analysis that evaluates the real balance of jobs and uses that may result from this mine, including assessing possible job loss due to impacts to water sources, possible failure of the mine to provide employment on a long-term basis due to inherent instability in this economic sector and due to the instability of the substrates to be mined. This analysis should address whether the proposed mine is

consistent with General Plan policies including Policy 2.5 requiring a balance of use designations.

Nevada County has a responsibility to our local community and local business that should come before its responsibility to a non-local business that has decided to re-open and abandoned mine. SJRTA asks that Nevada County honor this responsibility by rejecting the proposed mine as inconsistent with neighboring uses and zoning, and by initiating an economic analysis of this area that will guide future development.

3. The Proposed Mine Is Inconsistent with the General Plan's Recreation Element

The proposed mine exists in an area of mixed land ownership, and is adjacent to land cooperatively managed by the Bureau of Land Management and the Yuba Watershed Institute. In addition, the mine property is near two State Parks (Malakoff Diggins State Park and the South Yuba River State Park) as well as Forest Service land.

The last time the mine was operated, the mine discharged effluent directly into creeks that flow into the South Yuba River and South Yuba River State Park. Further, the mine would haul hazardous substances on roads that are used for recreation (cycling and hiking), as well as to access State Parks and federal lands. These parcels are designated by the General Plan to be used for recreation and open space. Specifically, General Plan policies include Policy 5.13: related to use of public land and facilities for public use and recreation and Policy 5.23. Fundamentally, recreation is incompatible with the proposed heavy industrial mining use due to safety concerns and due to the unpleasant, noisy, and visually-impaired atmosphere that the would mine create, not to mention the potential impact of the several hundred 30-inch diameter vent holes that open into the mine tunnel more than one-hundred feet below.

4. The EIR should address consistency with the General Plan's Open Space Policies

The proposed mine site is designated as "Forestry" in the General Plan. The intent of this designation is to protect open space. This intent is incompatible with the proposed heavy industrial mining use. The EIR should also consider the location and management goals of nearby BLM land that function as open space, in light of the above policies.

Projects that County has approved since 1995 have contributed incrementally to the decline in acreage dedicated to open space. The County has not monitored its implementation of the above policies. For example, for Policy 6.4, it would be helpful to know how many areas have been protected. How effective has that protection been? Given the County's lack of monitoring, the applicant may need to pay for a more detailed analysis of open space issues and a more detailed mitigation and monitoring program than would normally be required, due to these circumstances. Prior to approving the proposed mine, the County should assess whether this project is consistent with open space policies, including Policy 6.1; Policy 6.3; Policy 6.4 and Policy 6.9.

5. The proposed mine must be consistent with the General Plan's Noise Element and Policies

The impact of noise on sensitive receptors located nearby needs to be thoroughly analyzed and mitigated consistent with relevant General Plan policies. In addition Policies 9.11, 9.10 and 9.5 deserve detailed attention in the EIR for the proposed mine.

Each project that the County has approved since 1995 has incrementally contributed to the overall cumulative noise level. Many of the above policies, such as Policy 9.3, have not been implemented. Therefore the County has not yet provided mitigation to offset these past impacts. The proposed mine and associated traffic will make the noise level worse in the direct vicinity of the mine, and also in the parts of Nevada County through which the many large trucks associated with the mine will travel.

Additionally, the EIR consultants may need to assess the projects consistency with other state and federal laws and guidelines regarding noise, including the General Plan Guidelines published by the Office of Planning Research (OPR). In particular, the proximity to uses sensitive to noise, including North Columbia Schoolhouse Cultural Center, the Grizzly Hill School, and many residences, should be considered in an EIR, and also in determining whether the proposed project is consistent with the General Plan.

6. The mine must comply with County Safety Policies.

There are a host of General Plan policies related to safety that apply both to evaluation of whether a use is appropriate and consistent with the General Plan such that a permit may issue, and that also are intended to guide implementation of the proposed activity. Given the inherently risky nature of the proposed mine, the EIR should ensure compliance with relevant policies, as well as providing analysis that should have occurred if the Plan had been implemented with full monitoring and mitigation. Such policies include Policy GH-10.2.1.1, which requires "As part of the project site review process, require sufficient soils and geologic investigations to identify and evaluate the various geologic and seismic hazards that may exist for all proposed development, including subdivisions."

Further, Nevada County should require compliance with Policy HM-10.5.2.1 prior to issuing a new permit. This policy states: "The County will actively promote prompt clean-up or remediation of properties contaminated by mine waste or other hazardous materials and *shall not grant any discretionary or ministerial land use approvals to develop or change boundaries or reconfigure parcels believed to be contaminated unless and until the nature, extent, type and location of the contamination is determined and satisfactory arrangements are made for clean-up or remediation*, in accordance with Nevada County standards or state regulations." (*emphasis added)*. Nevada County approved subdivision of the mine parcels without assessing whether this subdivision met the requirements of this policy.

The proposed mine will generate numerous safety issues. The EIR needs to evaluate these safety issues in light of the above General Plan policies. Given the proposed

dewatering program for the mine, Policy FH-10.3.1.1 is particularly important and should be discussed in detail in the EIR. It is our understanding that Policies FP-10.12.1.5 and FP-10.12.1.18 have not been implemented. The EIR should analyze water storage requirements of the project and the surrounding area in detail.

7. The mine is inconsistent with County Water policy.

The proposed mining operation will generate impacts to both water quality and supply on the San Juan Ridge. These impacts are inconsistent with General Plan policies. The County has failed to implement many of its water policies and this compounds the problems for local residents and workers who depend on the local water supply in the San Juan Ridge.

Given that many of the existing homes, farms, gardens, and businesses on the San Juan Ridge rely on wells for water supply, Policy 11.3A (requiring development of a database of well information) is particularly important and the EIR should include an analysis of this data. To date, it appears that the County has either not produced this database, or has failed to make it publicly available.

Policy 11.11 is important because BLM does manage several parcels within the vicinity of the mine. The EIR should assess any impacts the mine may have on the habitat quality of BLM managed land and watercourses. Analysis of Policies 11.3, 11.9 and 11.9-A would be greatly enhanced through use of two local references: 1) Nevada County Natural Resources Report and GIS data;[115] and 2) the Sierra Cascade Foothills Conservation Report.[116]

The EIR should assess cumulative impacts to water quality, water supply and watershed health. Analysis should be based on adequate empirical analysis including a water budget analysis gathering data about wells, streams, and wetlands over a number of years, as well as watershed analyses performed for each of the affected water bodies.

8. The proposed mine must be consistent with General Plan requirements and policies regarding Wildlife and Vegetation

The proposed mining project will generate a number of significant impacts to local wildlife and plant communities. The EIR should provide a comprehensive assessment of these impacts consistent with relevant General Plan policies.

Additionally, Nevada County has failed to implement a number of the policies and programs required by the General Plan and this has resulted in an overall decline in the health of local flora and fauna. Each project that the County has approved since 1995 has incrementally contributed to the overall cumulative reduction in acres of habitat for local fish, wildlife, and plant species, including important natural communities such as riparian

[115] Beedy, Dr. Edward C., and Dr. Peter Brussard, *A Scientific Assessment of Watersheds and Ecosystems,* Nevada County Natural Resources Report (2002).
[116] John Hunter, et. al, *Sierra Cascade Foothills Conservation Report* (2011).

forests and meadows. Because the wildlife and vegetation section of the general plan is outdated and has never been fully implemented or monitored, the EIR must be more comprehensive and discuss these issues in detail. Reliance on the General Plan to assess or mitigate direct, indirect and cumulative impacts is not sufficient in these circumstances. Analysis of potential cumulative impacts must rely on recent data, including the Nevada County Natural Resources Report and the Sierra Cascade Foothills Conservation Report.[117] The EIR must also gather additional data to ensure that cumulative impacts are assessed.

Additional policies that should be considered in planning and evaluating this project include protections for heritage and landmark trees and groves and designing projects to avoid impacts to significant oak groves of all oak species (*see* Policies 13.8 and 13.9).

Because Nevada County has failed to follow through on identifying these sensitive resources, and has failed to monitor impacts to them, it may be that existing approved projects already exceed the level of significant impacts to these resources deemed acceptable in the General Plan. Impacts may be significant and violate state and federal environmental laws.

9. The proposed mine must be consistent with General Plan Air Quality policies and requirements.

The EIR must ensure that the proposed project meets air quality standards including those contained in the General Plan, and the EIR must address cumulative affects of projects that impact air quality. Nevada County is currently in non-attainment for ozone and other air pollutants. The County has done nothing to address this problem and it is has not implemented many of the above air quality policies. Nevada County has continued to approve numerous discretionary permits without thoughtfully addressing cumulative air pollution impacts, including greenhouse gas emissions. Each project that the County has approved since 1995 has incrementally contributed to the overall cumulative level of air emissions and since the above policies have not been implemented there has been no substantial mitigation provided.

The proposed mine and associated traffic will make the air quality in our region worse. The SJRTA is especially interested in learning whether or not the project will exceed the 25 tons per day emissions threshold and the EIR should provide this information. The EIR should discuss the relationship between air quality and forests because ozone and other pollutants negatively affect tree physiological health and because forest fires negatively affect local air quality.

The Northern Sierra Air Quality Management District (NSAQMD) has indicated that Western Nevada County (WNC) recently received a "Finding of Attainment" for the 1997 ozone standard (making the area Nonattainment with a Finding of Attainment as of September 30, 2012), but is Nonattainment for the 2008 standard with a classification of

[117] John Hunter, et. al, *Sierra Cascade Foothills Conservation Report* (2011).

Marginal. The EIR should discuss in detail the EPA's "SIP Requirements Rule" for the 2008 standard. Please note that SJRTA believes that NSAQMD typically avoids adopting stringent local rules and instead relies on state air pollution reduction programs that require cleaner and more efficient automobiles.

Chapter 6 of the Office of Planning and Research guidelines suggests that a County should describe the sources of air pollution and inventory emissions. The OPR Guidelines also suggest many strategies for reducing air pollution and notes that "While the permitting of new sources of air emissions falls under the jurisdiction of the local air district, regulation of these uses remains a city or county issue. Since the Nevada County General Plan does not comply with these OPR guidelines for air quality, the EIR should assess these issues. For example, the EIR could suggest strategies for reducing air pollution, including greenhouse gases, associated with the proposed project.

Because the air quality section of the General Plan is outdated and has never been fully implemented, and its policies remain unmonitored, the EIR must be more comprehensive and discuss air quality issues in detail. Reliance on the General Plan or the NSAQMD to assess or mitigate direct, indirect and cumulative impacts is not sufficient in these circumstances. The applicant may need to pay for a more detailed air quality study/analysis and a more detailed mitigation and monitoring program than would normally be required, due to these circumstances.

10. The mine is inconsistent with General Plan forestry direction

The project site has a General Plan designation of FOR, which is intended to support low-density development and timber harvest. The proposed heavy industrial mining use is generally inconsistent with this designation. It is difficult for trees and forest to coincide with an active mining operation. Allowing mining as a conditional use in the FOR district is misleading.

The EIR should also discuss the energy use, greenhouse gas generation, and air pollution from the mine and relate this to climate change. Climate change could increase local temperatures thereby affecting the composition of tree species within local forests. Some tree species are less conducive to supporting the timber industry. Air pollution from the proposed mine could negatively affect local trees. For example, pine trees located along Hwy 20 near Penn Valley are exhibiting brown spotting indicative of ozone damage.

There are several areas with outdoor recreation in the vicinity of the proposed project. The EIR should discuss how the FOR designation is intended to support these uses. We are concerned that a mine, with its attendant noise, air pollution, and low aesthetic values will discourage recreational use in the area.

11. Impacts to Agriculture may be significant and must be assessed in the EIR

In Nevada County, timber harvesting in the FOR land-use designation is commonly interpreted as a type of agricultural use. Further, the proposed mine lies near many parcels labeled with AG zoning, and the proposed mine tunnel is within a mile of numerous productive small farms and garden. Specifically, the proposed mine is near Mountain Bounty Farm, You Bet Farm, Ananda Farm, Grizzly Hill Farm, the Coughlin Ranch (an historic farm), the Double Oak Winery and their vineyard, as well as other smaller farms. These farms not only provide food, employment, and tax revenue, but also draw tourism.

Dewatering associated with the proposed mine could have a negative impact on local irrigation water for local gardens and farms, causing negative impacts to this important resource in Nevada County. Irrigation water for local gardens and farms is obtained via both groundwater and surface water. The EIR should provide a map of all farms and gardens within a 2-mile radius of the proposed project, describe their water supplies and projected future water demand for said farms, and consider whether the proposed mine will affect their water supplies. The EIR should also discuss the energy use and greenhouse gas generation of the mine and relate this to climate change. Climate change could increase local temperatures thereby increasing the need for additional water to support local farms and gardens.

In sum, the proposed mine will introduce a heavy industrial activity on the San Juan Ridge. The County has numerous General Plan policies as listed above that attempt to harmonize the heavy industrial use with the rural residential, forestry, and open space land-uses that currently exist in the area. There are numerous families, farmers, and businesses owners on the San Juan Ridge that currently contribute to our local economy and that will be negatively affected if the proposed mine is approved. The EIR should examine the spatial distribution of these existing land uses in relation to the proposed mine. The EIR must assess whether this mine project can go forward without damaging other lands uses.

VI. The San Juan Mining Corporation must submit a Reclamation Plan and Financial Assurances that meets the requirements of SMARA

The Surface Mining and Reclamation Act (SMARA)[118] requires a reclamation plan and financial assurances for surface mining operations and for "surface work incident to an underground mine."[119] This project is governed by SMARA because of the substantial surface work and surface disturbance that will occur as part of underground mining operations.

The operator of a project subject to SMARA must submit a reclamation plan and financial assurances. These submissions must be approved by the lead agency;[120] and for the project to proceed, a permit must issue.[121] As the past reclamation did not result in fully remediating the damaging impacts of the mine, including impacts to water quantity and quality as well as surface damage, the financial assurances requirement for re-opening the mine should be rigorously evaluated.

A. The proposed Reclamation Plan is not sufficient to SMARA

The purpose of a reclamation plan, is to:

> [Minimize] water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, including adverse surface effects incidental to underground mines, so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures.[122]

To achieve this purpose, the State Mining and Geology Board (SMGB) has promulgated regulations and performance standards that specify information that must be included in a proposed reclamation plan.[123] These standards include requirements for restoration and revegetation of the projects site, protection of groundwater quality, and topsoil protection.

In addition, standards also include provisions for disposing of onsite post-mining waste,[124] mitigating impacts of remaining tailing and mining waste such that they no longer pose a threat to public health and safety, and closure of surface openings.

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[118] California Public Resources Code sections 2710, *et seq*.
[119] Pub. Res. Code § 2735.
[120] Here, the lead agency is Nevada County. *See* Pub. Res. Code § 2728.
[121] *Id.* § 2770(a).
[122] *Id.* § 2733.
[123] *Id.*; Cal. Code Regs. tit. 14, §3502, *et seq*. The regulations are in addition to the general statistical information and general project description under SMARA.
[124] *Id.* § 3709(a).

Not all of these provisions were met at the close of the last mine operation period, which indicates that the past Reclamation Plan was not adequate and should not be accepted as a plan for reclamation of the proposed mining.

It appears that a wetlands delineation was not performed for the past period of mining, and that no assessment of net wetlands loss was made. Structures and buildings from the past mine were not removed, revegetation may not have been accomplished, and what little topsoil has been generated on the site over more than one century was not conserved. In addition, past activities disturbed fragile cryptogammic crusts, and no analysis or remediation of that impact has been performed. The reclamation plan associated with potential mine re-opening should include an assessment of past damage to these biological soil crusts, as well assessing how the new activities can minimize damage to these crusts, so as to avoid setting back natural reclamation of the site. Where disturbance is to occur, the plan should ensure that site conditions following mine reclamation are better than at undisturbed sites.

The present reclamation plan fails to address important requirements of SMARA. For example, the State Department of Conservation, Office of Mine Reclamation's letter of April 3, 2012 noted that the Reclamation Plan lacks any statement regarding public health and safety, lacks a termination date for the proposed mining, and lacks important information concerning construction of settling and infiltration ponds.[125]

As to water quality standards, the SMGB guidelines include extensive requirements regarding drainage, erosion, and water resources. The operator must control erosion, sedimentation, and siltation of watercourses as required by the State Water Resources Control Board and the Regional Water Quality Control Board.[126] Onsite and downstream beneficial uses of the water must be protected under California's Porter-Cologne Water Quality Control Act and the federal Clean Water Act.[127] Surface water and groundwater must be protected from siltation and pollutants that may diminish water quality or increase toxicity.[128] The mining operation must not diminish the quality of water, recharge potential, and storage capacity of groundwater aquifers, except as provided in an approved reclamation plan.[129] Anytime the project covers, reroutes, or has an impact on natural drainage, the reclamation plan must require measures ensuring that the incursion shall not cause increased runoff or sedimentation.

The operator has neglected to adequately address these issues. The past mining caused extensive dewatering of wells, including both domestic and public water supplies. This information does not appear to have been considered, and perhaps was not made available, to the Office of Mine Reclamation prior to the writing of the April 3 letter reviewing the proposed reclamation plan. Further, the mine caused contamination of wells including the well for the public school. In addition to dewatering impacts, the

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[125] State of California, Department of Conservation Office of Mine Reclamation, *Letter to Tod Herman regarding the San Juan Ridge Mine Reclamation Plan, CA Mine !D# 91-29-0017,* April 3 (2012).
[126] *Id.* § 3706(c).
[127] *Id.* § 3706(a).
[128] *Id.* § 3710(a).
[129] *Id.* § 3706(b).

mine discharged unanticipated waters into local streams well in excess of permitted quantities. The effects of these past impacts on public health and the environment have yet to be assessed.

Rather than address the potential for the planned mining to repeat these past impacts, the application states, "No surface disturbing activities will occur within site waters." Although the operator may not conduct surface-disturbing activities within site waters, this does not mean that erosion, sedimentation, and siltation will not occur from surface-disturbing activities in proximity to the site waters. Additionally, the operator failed to address how it plans to protect water quality, recharge potential, and storage capacity of the aquifer in light of the major dewatering event that occurred when the mine was previously in operation.

Finally, habitat performance standards must incorporate by reference all federal ESA and state CESA requirements.[130] Disturbed habitat must be reclaimed to a condition comparable to that which existed before the present mining, unless the end use of the site either precludes wildlife or the reclamation plan establishes a different type of habitat than previously existed.[131] Reclamation activities must avoid any disturbance to wetland habitat.[132] Any wetland habitat disturbed by mining operations must be mitigated at a minimum 1:1 ratio.[133]

The reclamation plan fails to provide an accurate characterization of impacts to wildlife and habitat. The plan states that "the use of the property by wildlife is minimal due to the absence of vegetative cover for food and protection," though this conclusion was not based on documented field observations. In fact, the property provides habitat to a host of wildlife species, and nearby property that would be directly affected by the mining activities include riparian areas and older forest that support rare and threatened species. Species listed under the California Endangered Species Act sighted on the subject properties include sandhill crane. Other wildlife species that may use the project area include Western pond turtle and willow flycatcher. A documented pair of California spotted owls[134] may use this area for foraging habitat, and the existing vegetation provides crucial habitat and resources for raptor prey species. In addition, with the help of camera traps, the Yuba Watershed Institute has observed and recorded significant numbers of mammals adjacent to the mine property. This information suggests that wildlife could be using the diggings as a wildlife corridor and may be affected by the effects of a large nearby mine.

Spring Creek and Shady Creek support known populations of the foothill yellow-legged frog, and there are known populations of California red-legged frog within several miles of the project site that may be affected by discharge from the proposed mining. The

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[130] *Id.* § 3703(a).
[131] *Id.* § 3703(b).
[132] *Id.*
[133] *Id.* §3703(c).
[134] California Department of Fish and Game, *California Natural Diversity Database* (2012), available at http://www.dfg.ca.gov/biogeodata/cnddb/.

reclamation plan must address how wildlife habitat will be protected and conserved if the proposed mining is allowed.

Nevada County's lack of monitoring and failure to establish baseline information prior to implementation of this mine in 1994 has crippled its ability to assess whether these requirements have been met to date, and thus hampers its ability assess potential future impacts of the proposed re-opening. Empirical study must assess past impacts of this mine before an adequate reclamation plan can be developed that will avoid future unlawful impacts.

B. Financial Assurances must be sufficient

SMARA requires that the operator must provide adequate financial assurances that reclamation will be completed. The financial assurance must be in the form of a surety bond, an irrevocable letter of credit, or a trust fund and must be payable to both the lead agency and the Department of conservation.[135]

The amount of the financial assurance must be sufficient to complete reclamation per the reclamation plan and must include a reasonable estimate for administrative costs incurred by the lead agency or Department of Conservation.[136] The financial assurance must account for physical activities and materials necessary for the plan,[137] unit costs or third-party contracting costs the lead agency may incur in overseeing the operator's compliance and the number of those unit costs,[138] and the plan must also include a contingency amount of not more than ten-percent.[139]

The operator has not provided an estimate of what financial assurances may total and has deferred such calculations until review and comment on the current reclamation plan.

The past mining caused contamination of public water supplies. The past bond supported funds to partially mitigate these impacts, but was insufficient to address all known impacts. The public school has spent more than $150,000. Private landowners may not have implemented the costly measures needed to ensure that their water supplies meet water quality standards, and thus may have been exposed to contaminants. Nevada County has received letters concerning possible health impacts of well contamination caused by the past mine. Discharge to surface waters also may have significant impacts on aquatic ecosystems. Financial assurances must be made that account for mitigations to all of these potential impacts.

[135] Pub. Res. Code §2773(a)(1), (a)(4).
[136] *Id.* §2770(d); Cal. Code Regs. tit. 14, §§3802(b), 3804(b).
[137] Cal. Code Regs. tit. 14, §3804(b).
[138] *Id.* §3804(a)(2), (a)(3).
[139] *Id.* §3804(a)(3).

VII. Clean Water Act

The Clean Water Act, 33 U.S.C. §125, et. seq. (1972) (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the CWA, EPA has implemented pollution control programs such as setting wastewater standards for industry and has set water quality standards for all contaminants in surface waters.

The CWA has three major components. First, under the Act the States must set water quality standards. Second, the Federal government must set effluent standards for dischargers. Third, all dischargers must obtain a discharge permit that specifies discharge limitations. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained.

In California, the Porter-Cologne Water Quality Act defines the State Water Quality Boards' role in implementing the Act, and adds water quality requirements including special protection for public water supply and protection for groundwater.

The State Water Resources Control Board (SWRCB) is responsible for providing a statewide perspective on a wide range of water quality planning and regulatory functions. The Regional Boards issue permits for active mine operators and direct cleanups by responsible parties where appropriate. It also supports watershed restoration projects that address water quality degradation from mine waste discharged into watersheds.

Regulatory programs include the 303(d) listings program, the National Pollutant Discharge Elimination System (NPDES) program, and the Land Disposal Program. There is no specific program at the SWRCB to address water pollution from mines directly, but rather a general approach to addressing water quality violations.

The three provisions of the CWA that appear to be most relevant to the project at hand are: 1) CWA Section 301, which authorizes the National Pollutant Discharge Elimination System (NPDES) permit program controls discharges; 2) CWA Section 303, which authorizes designation of watercourses as impaired, and provides for setting total maximum daily loads (TMDLs); and 3) CWA Section 404, which requires permits for dredging and filling of wetlands.

A. The proposed discharge requires a NPDES permit; a Permit may be issued only if consistent with the CWA.

1. NPDES Permits Required

The proposed discharge of water from the mine tunnel, and likely discharge from settling and infiltration ponds requires a discharge permit under the Clean Water Act. Congress enacted the CWA, 33 U.S.C. § 1251, *et seq.,* to "restore and maintain the chemical, physical, and biological integrity of the nation's waters" by eliminating the discharge of

pollutants into those waters. 33 U.S.C. § 1251(a). Under section 301(b)(1)(C) of the Clean Water Act, National Pollutant Discharge Elimination System (NPDES) permits must include effluent limits as stringent as necessary to achieve water quality standards. The discharge of any pollutant into a water body is prohibited unless the discharge is in compliance with a NPDES permit. 33 U.S.C. 1311.

This includes the discharge of pollutants to dry land or groundwater where pollutants would eventually enter surface waters. *See Washington Wilderness Coalition v. Hecla Mining Co*., 870 F. Supp. 983, 990 (E.D. Wash. 1994).

The mining application proposes, albeit in a vague and difficult to interpret manner, three activities that require NPDES permits. First, the Application and Operation Plan propose that water be pumped out of the mine tunnel and into a system of settling and infiltration ponds. Second, the applicant implies that water may be directly discharged into streams in the event that water quantity is too great for ponds to contain, which is how excess water was disposed of during the last period of operation. Finally, the applicant indicates that wet slurry that may contain hazardous materials will be removed from solid material removed from the tunnel using a centrifugal force machine. Some of the moisture removed will most likely be discharged, and requires a discharge permit.

2. No NPDES Permit May Be Issued Should the Water Quality Control Board Find that the Discharge May Result in Unlawful Impairment of Water Quality.

During its past operation between 1994 and 1997, this mine discharged water into streams and creeks in gross excess of that allowed by applicable permits,[140] repeatedly failed to meet WDRs established by the permit,[141] and the dewatering and subsequent cessation of pumping is thought to have caused contamination of domestic drinking water wells,[142] as well as public water supplies in violation of both the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act. It is likely that without sufficient pre-treatment before infiltration, water removed from the mine will fail to pass water quality standards and could contaminate groundwater and surface water. In addition, reverse migration of water into wells after the project terminates and pumping ceases may also cause contamination of groundwater in violation of the California Porter-Cologne Act. Because each of these processes may result in the failure to attain water quality standards, it may be that no permit can be issued.

The contamination of the wells at Grizzly Hill School resulted in students being required to use bottled water for 13 years. The school water supply serves more than 80 students and at least 15 staff and is thus a "public water supply" under the Porter-Cologne Act. The school water still fails to meet drinking water standards without treatment and filtration. Other public water supplies may be affected by the proposed mine, including the water supply for the Sierra Family Medical Clinic and the water supply for the

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140 *See Final Report: Environmental Analysis of Increased Discharge of Groundwater from San Juan Ridge Mine to Spring and Shady Creeks,* Jones & Stokes Associates, Inc. (1996).
141 Luhdorff and Scalmanini, at 36.
142 Luhdorff and Scalmanini, at 73.

Ananda School (an elementary school less than one mile from the proposed mine tunnel that serves 65 students).

No NPDES permit may be issued if the imposition of conditions cannot ensure compliance with the applicable water quality standards. 40 C.F.R. 122.4(d). In addition, no permit may be issued to a new source or new discharger if the discharge would cause or contribute to a violation of water quality standards. *Id.* 122.4(i).

B. The EIR must evaluate impacts to CWA impaired streams and assess the effect of mine discharge on TMDLs

The proposed mining project may result in discharges of mercury into streams and creeks that are tributaries to the Middle Yuba and South Yuba Rivers, which are listed as impaired under Section 303(d) of the Clean Water Act. A TMDL to address mercury contamination is currently being developed for both water bodies. The EIR should assess how effluent from the mine may affect achievement of the TMDL, and any permit should provide a mechanism to update the permit to ensure that mine discharge is consistent with the TMDLs developed.

The goal of the Clean Water Act (CWA) is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 303(d) of the CWA and its supporting regulations (40 CFR 130.2 and 130.7) establish the Impaired Waters Listing and Total Maximum Daily Load (TMDL) Program.

Each state must develop an antidegradation policy. *See* 40 C.F.R. § 131.12(a). The antidegradation policy must, at a minimum, be consistent with the following: (1) existing in stream water uses and the level of water quality necessary to protect the existing uses must be maintained and protected; (2) where water quality exceeds levels necessary to support designated uses, that quality must be maintained and protected at the present level, except in limited circumstances; and (3) for waters designated as outstanding resource waters, the existing water quality must be maintained and protected at the current level, with no exceptions. *Id*.

The CWA also requires states to identify and prioritize the waters within the state that, despite the implementation of technical pollution controls, do not meet the state water quality standards**.** *Am. Canoe Ass'n v. United States Envtl. Prot. Agency,* 289 F.3d 509, 511 (8th Cir. 2002) (citing 33 U.S.C. § 1313(d)). These waters are called water quality limited segments ("WQLSs"). This program is primarily a State-driven process with EPA oversight where States, Territories, and authorized Tribes are required to develop lists of "water-quality limited segments," every two years (e.g. 2008, 2010).

Once the WQLSs are identified, the state must rank the identified waters based on the severity of the pollution and the use of the waters. 33 U.S.C. § 1313(d). Based on this ranking, the state must develop a total maximum daily load ("TMDL") for the pollutants identified by EPA for each WQLS. *See Sierra Club, North Star Chapter v. Browner,* 843 F. Supp. 1304, 1307 (D. Minn. 1993) (describing TMDL procedure).

These 303(d) lists include segments that will not meet water quality standards for a particular pollutant even after a technology-based CWA permit is in place. The CWA also requires States to develop a pollutant "budget" or TMDL, for every water body/pollutant combination on this 303(d) list. EPA approves both the 303(d) lists of impaired waters and the TMDLs. To date, about 44,000 waters are listed nationwide as impaired, and nearly 41,000 TMDLs have been developed.

The TMDL sets the maximum allowable load allocation of a pollutant to a water body so that water quality standards will not be exceeded. 40 C.F.R. § 130.2(i). The TMDL calculates the maximum amount of a pollutant that can enter a water body, also known as the loading capacity, so that the water body will meet applicable water quality standards. The TMDL allocates that pollutant load to point sources (Wasteload Allocation or WLA) and nonpoint sources (Load Allocation or LA), which include both anthropogenic, and natural background sources of the pollutant. Approved waste load allocations for point sources must be implemented in applicable National Pollutant Discharge Elimination System (NPDES) permits.

In 2010, the State Water Resources Control Board released an updated 303(d) list designating even more Sierra Nevada streams and reservoirs as being impaired for mercury. The majority of mercury contamination in the Sierra results from the large-scale use of mercury in historic gold mining operations. The following water bodies may be affected indirectly by mine discharge into tributaries of these impaired water bodies:

Yuba River Watershed Water Bodies Listed Impaired For Mercury	**Newly Listed**
New Bullards Bar Reservoir (outflow flows into Middle Yuba)	new
Middle Fork of the Yuba River (Grizzly Creek is a tributary)	new
Humbug Creek (near project, tributary to South Yuba)	
South Fork of the Yuba River (Spaulding Reservoir to Englebright) (Spring and Shady Creek are tributaries)	new
Englebright Lake (Middle and South Yuba are flow into the reservoir)	new
Lower Yuba River (Middle and South Yuba flow into the Lower Yuba)	new

Placing a water body on the Clean Water Act Section 303(d) list is the beginning of a regulatory process**.** The Regional Water Quality Control Board then develops a TMDL for each listed impairment, typically but not always for individual water bodies. The 303(d) listing and order are intended to reduce the amount of the impairing pollutant in

water bodies. The TMDL sets limits on the amount of contaminant allowable, by allocating loadings and responsibility for control to particular sources or activities. If dischargers are operating under waste discharge permits, the Regional Water Quality Control Board then updates those permits and requires that loadings of that pollutant in effluent be reduced.

In the case of mercury in the Yuba River watershed, the source of mercury contamination is largely river gravels that were washed into the streams and rivers during hydraulic mining. The SJRM property is likely to contain high levels of elemental mercury onsite. Disruption due to mining activities, including excavation, use of machinery, road building, and construction of settling and infiltration ponds could lead to the transport of mercury-laden sediment into the tributaries of the South and Middle Yuba Rivers.

C. Impacts to Wetlands May Require a permit under Section 404(d) of the Clean Water Act

The mine applicant appears to propose numerous activities in an area where substantial wetlands are present. In addition, significant impacts on the hydrologic regime may result in destruction of wetlands.

The Notice of Preparation rightly indicates that a wetlands delineation is required. Section 404 of the Clean Water Act (CWA) regulates the discharge fill material into waters of the United States. 33 U.S.C. § 1344(e). The Secretary of the Army, acting through the Corps, may issue permits for such activities. *Id*. The Corps has adopted regulations to implement this permitting process, known as the "public interest" factors. 33 C.F.R. §§ 320 *et seq*. In addition, the EPA promulgated regulations, known as the "404(b)(1) Guidelines," to eliminate unnecessary environmental impacts. 33 U.S.C. § 1344(b)(1); 40 C.F.R. § 230. The Corps must review all proposed section 404 permits under both the Corps' public interest factors and EPA's 404(b)(1) guidelines. 33 C.F.R. § 320.2(f). The Corps may issue individual and general permits under section 404 of the CWA. 33 U.S.C. § 1344(a) & (e).

Section 404 of the CWA prohibits the filling or dredging of wetlands without first receiving a § 404(b) permit from the U.S. Army Corps of Engineers. *33 U.S.C. § 1344 (a)*, *(d)*. The CWA and its implementing regulations "express a strong preference for wetland protection." *National Wildlife Federation v. Whistler*, 27 F.3d 1341, 1344 (8th Cir. 1994).

The application proposes many activities that would potentially impact wetlands and aquatic ecosystems. These activities appear to be necessary to the project, or are conceived as essential to the project, and include removal of large volumes of groundwater from the mine prior to and during operations, creation of settling and infiltration ponds in and around wetlands, discharge of material extracted from target gravels near or in wetlands, and draining of wetlands due to excavation and drilling of large holes into or near wetland areas. These activities require a section 404(d) permit.

A Section 404 permit may not be issued if (i) there is a practicable alternative which would have less adverse impact and does not have other significant adverse environmental consequences, (ii) the discharge causes or contributes to violations of any applicable state water quality standards, (iii) the discharge would result in the likely destruction or adverse modification of critical habitat, (iv) the discharge will cause or contribute to significant degradation of waters of the United States, (v) the discharge does not include all appropriate and practicable measures to minimize potential harm, or (vi) there does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with the Corps' Guidelines for permit issuance. 40 C.F.R. § 230.10-12; *see Bering Strait Citizens for Responsible Resource Dev. v. U.S. Army Corps of Engineers*, 524 F.3d 938, 946-47 (9th Cir. 2008). In addition, a permit may not be issued "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem." 40 C.F.R. § 230.10(d).

The EIR should assess the project in light of the possible inability of the project to comply with CWA standards such that a 404 permit could be issued, and should address whether feasible alternatives or adequate mitigation exists to allow compliance with section 404 of the Clean Water Act. Finally, some assessment of past impacts to wetlands should be included in the EIR.

VIII. The State and Federal Endangered Species Acts

There are numerous species within the project area that are listed under the California (CESA) and federal (ESA) Endangered Species Acts. Without the appropriate permits, the applicant and Nevada County are prohibited from causing a take of listed species.

In addition to prohibiting a take of listed species, both CESA and ESA provide early consultation procedures that can assist private land owners in avoiding unlawful take of listed species. The San Juan Ridge Taxpayers Association recommends that Nevada County and the mine applicant initiate consultation with both the California Department of Fish and Game and the U.S. Fish and Wildlife Service, and that Nevada County consider requiring a Habitat Conservation Plan to address impacts to rare, threatened and endangered species over the life of this very long project, which may be underway for decades if approved. Below, the state and federal requirements are reviewed.

A. Federal Endangered Species Act

There are a number of species that could be affected by the proposed project that are listed under the Endangered Species Act. Specifically, the California red-legged frog is listed as threatened under the Endangered Species Act. In addition, many affected species have been petitioned for listing as threatened or endangered under the Act, and may be considered to be sufficiently threatened to be listed under the Act over the life of the proposed project, particularly as the project would have very severe impacts on amphibian species for which listing petitions are pending decision.

The federal ESA (Section 7) prohibits the take of individuals of species listed as Threatened or Endangered under the ESA, and provides for the protection of these species via an early consultation process for federal agencies (Section 9). Section 10 of the ESA also allows for some unintended take through the incidental take permit process, requiring application for an incidental take permit.

Under the federal ESA, the take of an individual of a species listed under the Act is prohibited. A "take" can include both direct harm to an individual of the listed species, or impacts to habitat that may cause a take to occur (50 CFR Section 17.3).

The U.S. Fish and Wildlife Service has developed regulations for implementing the ESA that create a planning process by which private parties or States may enter into a Habitat Conservation Planning process as part of the incidental take permit process.

Because the possibility exists that a take of a listed species may occur, the mine applicant and County of Nevada should consult with the U.S. Fish and Wildlife Service and determine whether the potential impacts to listed species and listed species habitat should be addressed utilizing the Habitat Conservation Planning process, and whether the applicant While there is not the formal consulting requirement as there would be for a federal agency, San Juan Gold Mine does have an affirmative legal obligation to avoid committing a take of a listed species. Furthermore, given the length of the project, the Habitat Conservation Planning process might assist the company in avoiding impacts to a range of sensitive, threatened, and endangered species for the life of the project.

B. California Endangered Species Act

Like the federal ESA, the California Endangered Species Act prohibits the take of listed species (Fish and Game Code Section 2080).

A number of species listed under the CESA may be affected by this project, as may species that have been identified as Species of Special Concern in the State of California. Specifically, the sandhill crane and Western pond turtle been sighted in and around the project area, and there is potentially suitable habitat (riparian areas and meadows) for migrating willow flycatchers within and around the project area. These species may be affected by the proposed mining.

CESA includes provisions for permit applicants to avoid possible violations (§783.2. Incidental Take Permit Applications). CESA also provides for early consultation. The lead agency for enforcing the CESA is the California Department of Fish and Game. The project applicant and Nevada County should engage in early consultation with the California Department of Fish and Game to avoid impacts to listed species.

IX. Conclusion

The San Juan Ridge Taxpayers Association strongly urges Nevada County to prepare an EIR that rigorously evaluates the extensive potentially significant impacts the proposed project may have to water quality and quantity; to wildlife; to riparian, wetland, and aquatic habitats; to air quality; to our economic well being; as wells as to a host of other resources important to the people of Nevada County.

In addition, the SJRTA requests that a careful determination be made as to the consistency of the proposed project with our General Plan, and other state, federal, and local laws. The SJRTA asks that the County make clear if some of the possible impacts will not be able to be mitigated, and asks the County to reject this proposed mine re-opening if it cannot be made to be consistent with the law. Specifically, if Nevada County cannot guarantee that this community and our natural resources will not be damaged by dewatering, discharge of effluent, and possible contamination, then the mine should not be allowed to go forward.

Literature Cited

The following literature is cited in the comments above, and should be read as if laid out in full in the text of our comments.

Argent, DG., Flebbe, PA. *Fine sediment effects on Brook Trout eggs in laboratory streams*, 39 J. Fish. Res. 253 (1999).

Ashton, D.T., A.J. Lind and K.E. Schlick, *Foothill Yellow-legged Frog (Rana boylii) Natural History,* United States Forest Service: Pacific Southwest Research Station (1997).

Barton, B.A. and Taylor, B.R., *Dissolved oxygen requirements for fish of the Peace, Athabasca and Slave River basins,* Northern River Basins Study, Alberta (1994).

Beedy, Dr. Edward C., and Dr. Peter Brussard, *A Scientific Assessment of Watersheds and Ecosystems,* Nevada County Natural Resources Report (2002).

Bury, R.B.,. *Habits and home range of the Pacific pond turtle, Clemmys marmorata, in a stream community.* Ph.D. dissertation, (1972).

California Native Plants Society, *The 6th Edition of the CNPS Inventory of Rare and Endangered Plants,* available at http://www.rareplants.cnps.org/glossary.html#staterank.

California Department of Fish and Game, *California Natural Diversity Database* (2012), available at http://www.dfg.ca.gov/biogeodata/cnddb/.

Deetz, J., Introduction. *In Historical Archaeology in Global Perspective,* Smithsonian Institution Press. Washington, D.C. (1991).

Doudoroff, P. and D.L. Shumway, *Dissolved oxygen requirements of freshwater fishes*, Food and Agriculture Organization of the United Nations (1986).

Ernst, C.H. and J.E. Lovich, *Turtles of the United States and Canada* 827 (2nd ed. 2009).

Green, G. A., Bombay, H. L., and Morrison, M. L., *Conservation assessment of the Willow Flycatcher in the Sierra Nevada*, White Mountain Research Station (2003).

Hamandawana, H.. *Methodology to detect long-term trends in groundwater by monitoring changes in vegetation distribution*. 32 Int. Jour. Rem. Sens. 3329 (2011).

Hardesty, D. and B. Little, *Assessing site significance: a guide for archaeologists and historians* (2000).

Hartwell, H., Welsh, JR., Olivier, L.M., *Stream amphibians as indicators of ecosystem stress: a case study from California's redwoods*. 8 Ecol. Appl. 1118 (1998).

Hayden-Wing et. al, *A method for detecting Dewatering effects of underground mining activities on surface wetlands,* Proceedings of the Symposium of the 16th Annual National Meeting of the Am. Soc. Surf. Min. Recl. (1999).

Hynes, H. B. N. *The ecology of running waters* (1970).

International Union for Conservation of Nature, 2012. *The IUCN Red List of Threatened Species. Version 2012.2*. <http://www.iucnredlist.org>.

Jennings, M. R., and M. P. Hayes, *Amphibian and reptiles species of special concern in California,* California Department of Fish and Game (1994).

Jones & Stokes Associates, Inc. , Final Report: *Environmental Analysis of Increased Discharge of Groundwater from San Juan Ridge Mine to Spring and Shady Creeks* (1996).

Jones, A.B., Rand, B., Slotton, D.G., *Mercury Effects, Sources and Control Measures. Special Report,* San Francisco Estuaries Institute (1996).

Krebs, C.J.. *Ecology. The Experimental Analysis of Distribution and Abundance* (5th ed. 1972).

Likens, G. E., AND M. B. Davis, *Post-glacial history of Mirror Lake and its watershed in New Hampshire U.S.A.: An initial report,* 19 Int. Ver. Theor. Angew. Limnol. Verh. 982 (1975).

Lindstrom, S., *A Historic Sites Archaeological Survey of the Main Hydraulic Pit Basin Malakoff Diggins State Historic Park North Bloomfield, Nevada County California,* State of California Department of Parks and Recreation (1990).

Lockton, A.J. *Species account: Lycopodiella inundata*, 2012 Bot. Exch. Club & Soc. Brit. Isles, available at www.bsbi.org.uk.

Luhdorff and Scalmanini, *Hydrologic Study of Ground-Water Impacts from Mine Dewatering at the San Juan Ridge Mine* (1996).

Merritt et al, *Theory, methods and tools for determining environmental flows for riparian vegetation: riparian vegetation-flow response guilds* 55 Fresh. Biol. 206 (2009).

NatureServe.. *Explorer: An online encyclopedia of life* [web application]. 2011, *available at* http://www.natureserve.org/explorer

Nussbaum, R. A., Brodie, D. E., and Storm, R. M. *Amphibians and Reptiles of the Pacific Northwest*. 243 (1983).

Olson, D.H. and Davis. R., *Conservation assessment for the Foothill Yellow-legged Frog (Rana boylii)*, United States Forest Service (2009).

Province of British Columbia, Ministry of Environment, Lands and Parks, and Ministry of Forests, *Suspended sediment and fish habitat in central interior watersheds of British Columbia*. 7: 31 (1998).

Rasmussen, K.K. and J.E. Laweson, Lycopodiella inundata in British plant communities and reasons for its decline, (2002), available at

http://scholar.googleusercontent.com/scholar?q=cache:gNxfccwsqsJ:scholar.google.com/+Lycopodiella+inundata&hl=en&as_sdt=0,45.

Rathbun, G. B., N. J. Scott, T. G. Murphey. 2002. *Terrestrial habitat use by Pacific pond turtles in a Mediterranean climate* 47 Southwest. Nat. 225 (2002).

Reese, D.A. and H.H. Welsh. *Use of Terrestrial Habitat by Western Pond Turtles, Clemmys marmorata: Implications for Management*. Conservation, Restoration, and Management of Tortoises and Turtles. 352 (1997), available at http://www.rsl.psw.fs.fed.us/projects/wild/reese/reese3.pdf.

Samoli, E., et al. *Acute effects of air pollution on pediatric asthma exacerbation: Evidence of association and modification* 111 Env. Res. 418 (2011).

Storer, T.I. *A synopsis of the amphibia of California* 27 Pub. Zoo. 1 (1925).

The Center for Biological Diversity, Petition *To List 53 Amphibians And Reptiles In The United States As Threatened Or Endangered Species Under The Endangered Species Act* (2012).

Truelson, R.L., *Water quality criteria for dissolved oxygen*, British Columbia's Ministry of Environment, Lands and Parks (1997).

United States Fish and Wildlife Service, *Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the California Red-Legged Frog* 75 (2010).

United States Forest Service, *Technical Guide to Managing Ground Water Resources* FS-88 (2007).

United States Geological Survey, *D.A. Geochemical characterization of water, sediment, and biota affected by mercury contamination and acidic drainage from historical gold mining, Greenhorn Creek, Nevada County, California, 1999-2001.* Report 2004-5251 (2005)

United States Geological Survey, *Estimated use of water in the United States in 2005* (2009), available at http://water.usgs.gov/watuse/data/2005/.

United States Geological Survey: *Mercury, Methylmercury, and other constituents in sediment and water from seasonal and permanent wetlands in the Cache Creek settling basin and Yolo bypass, Yolo County, California, 2005-06* 2009-1182 (2009).

United States Geological Survey: *The effects of sediment and mercury mobilization in the South Yuba River and Humbug Creek Confluence Area, Nevada County, California: Concentrations, speciation, and environmental fate—Part 1: Field characterization: 2010-1325A* 104 (2011).

Unites States National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Biological Opinion for the U.S. Army Corps of Engineers' operation*

and maintenance of Englebright and Daguerre Point dams and Englebright Reservoir on the Yuba River (Feb. 29, 2012).

Waters, T. F. *Sediment in Streams Sources, Biological Effects and Control*. Amer. Fish. Soc. Monograph 7 (1995).

Welsh, H. H., JR. *An ecogeographic analysis of the herpetofauna of the Sierra San Pedro Ma´rtir Region, Baja California, with a contribution to the biogeography of the Baja California herpetofauna*. 46 Cal. Acad. Sci. 1 (1988).

Wood, P. J., and Armitage, P. D. *Biological effects of fine sediment in the lotic environment* 21 Environ Manage., 203 (1997).

Yarnell, S., Larsen, E., *Foothill Yellow-legged Frog Population data for selected tributaries of the South Yuba River*, California Department of Parks and Recreation (2000).

Yarnell, S., Larsen, E., Mount, J. , *Foothill Yellow-legged Frog Population Data and Fluvial Geomorphic Data for Spring and Shady Creeks,* California Department of Parks and Recreation (1998).

Yarnell, S., Larsen, E., Mount, J. , *Foothill Yellow-legged Frog population data and fluvial geomorphic data for Spring, Shady and Humbug Creeks; Nevada County, CA.*, California Department of Parks and Recreation (1999).

Yuba Watershed Institute, Timber Framer's Guild of North America, and Bureau of Land Management*, Inimim Forest Timber Harvest Implementation Plan* (1996).

Zektser et al., *Environmental Impacts of Groundwater overdraft: Selected Case Studies in the Southwestern United States*, 47 Environ. Geol. 396 (2005).

APPENDICES

Appendix A

Balance Hydrologics, Inc.

Review of JSA report evaluating effects of increased discharges into Spring and Shady Creeks from the San Juan Ridge Mine

October 10, 2012