STATE WATER RESOURCES CONTROL BOARD,

DRAFT SUBSTITUTE ENVIRONMENTAL DOCUMENTATION

REVISION TO THE SOURCES OF DRINKING WATER POLICY TO ESTABLISH A SITE-SPECIFIC EXCEPTION FOR THE ROYAL MOUNTAIN KING MINE SITE

September 2014

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

The State Water Resources Control Board's (State Water Board) regulations for implementing the California Environmental Quality Act (Pub. Res. Code §§ 21000 et seq.) require the State Water Board and the Regional Water Quality Control Boards to conduct environmental review of their certified regulatory programs, which includes state policies and plans affecting water quality control. (Cal. Code Regs., tit. 23, §§ 3775, 3777.) The Central Valley Regional Water Quality Control Board (Central Valley Water Board) prepared Substitute Environmental Documentation (SED) to accompany the Amendment to the Central Valley Water Board's Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Amendment) which described the whole of the proposed action as including the need for the proposed revision to the Sources of Drinking Water Policy to correspond with the Amendment's de-designation of MUN from the groundwater at portions of a former gold mine site in Calaveras County. Environmental evaluation for the proposed revision to the Sources of Drinking Water Policy is encompassed within the scope of the Central Valley Water Board's SED; therefore, the Central Valley Water Board's SED shall be utilized and support the State Water Board's revision to the Sources of Drinking Water Policy.

REGIONAL WATER QUALITY CONTROL BOARD,
CENTRAL VALLEY REGION

FINAL STAFF REPORT

Amendment
to
The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins
to
Provide a Groundwater Regulatory Framework Towards Closure of the Royal Mountain King Mine Site, Calaveras County

March 2014

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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D I S C L A I M E R

This publication is a report by staff of the California Regional Water Quality Control Board, Central Valley Region. This report contains the evaluation of alternatives and technical support for the adoption of an amendment to the Water Quality Control Plan for the Sacramento and San Joaquin River Basin (Resolution No. R5-2014-0047). Mention of specific products does not represent endorsement of those products by the Central Valley Water Board.

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To
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ACKNOWLEDGEMENTS:

Disclosure: Funding for this project has been provided in part through Agreement 09-904-150 between the State Water Resources Control Board and the Meridian Beartrack Company (Meridian). The Agreement, “Basin Plan Amendments to Remove Groundwater Beneficial Use Designations for the Hodson/Littlejohn’s Fault Zone Area Located near Copperopolis in Calaveras County,” was initiated to evaluate groundwater beneficial uses and to define necessary actions to protect groundwater beneficial uses at the Royal Mountain King Mine site in western Calaveras County.

EXECUTIVE SUMMARY

The proposed Basin Plan Amendment facilitates the closure of the former Royal Mountain King Mine Site in southwestern Calaveras County (RMKM Site or Site) by de-designating and setting variances for groundwater at a portion of the Site in conformity with the directives of State Water Board Order WQO-2004-0007 (*RMKM Remand Order*).

In 1988, the Central Valley Regional Water Quality Control Board (Central Valley Water Board or Board) issued waste discharge requirements to regulate Meridian Beartrack Company's (Meridian) gold mining operations at the Site. In 2001, as Meridian was closing the Site, the Central Valley Water Board issued orders that applied more stringent closure criteria. Meridian petitioned the Board's issuance of these orders to the State Water Resource Control Board (State Water Board). In the *RMKM Remand Order*, the State Water Board subsequently found that the additional expense that would result from the closure of the Site under the more stringent criteria was unjustifiable, due to the fact that this would provide only limited water quality benefits. The State Water Board then directed the Central Valley Water Board to explore other alternatives for regulating closure activities at the RMKM Site.

This Staff Report provides supporting information to justify a Proposed Amendment to the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan). Recognizing the fact that the groundwater that underlies portions of the RMKM Site is of poor quality, the Proposed Amendment will allow for the closure of the Site under less stringent closure criteria. The Proposed Amendment contains the following elements:

1. Site-specific Basin Plan implementation provisions that will require Meridian to continue to implement a groundwater management strategy designed to ensure that existing groundwater impacts do not spread.
2. The de-designation of the municipal and domestic supply (MUN) and agricultural supply (AGR) groundwater beneficial uses in certain areas of the RMKM Site where levels of total dissolved solids (TDS) exceed 3,000 mg/L, and in areas underneath and immediately downgradient of the waste management units that have not yet been closed. While the de-designation of some areas beneath and downgradient of the waste management units is inconsistent with the *Sources of Drinking Water Policy*, the Board will request that the State Water Board make a site-specific modification to the *Sources of Drinking Water Policy* to resolve this inconsistency. This de-designation will allow the groundwater management strategy to be implemented consistent with the Board's Basin Plan.
3. The establishment of groundwater variances for the industrial service supply (IND) and industrial process supply (PRO) groundwater beneficial uses for certain constituents in the same area as the MUN and AGR de-designation.

The report demonstrates that the proposed Amendment is consistent with state laws, plans, and policies,[1] and includes an evaluation of alternatives.

[1] While the Proposed Amendment is partially inconsistent with State Water Board Resolution 88-63 (*Sources of Drinking Water Policy*), the Central Valley Water Board will request that the State Water Board make a site-specific modification to the *Sources of Drinking Water Policy* that would resolve this inconsistency.

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ATTACHMENT A

Geological and Hydrological Setting of the RMKM Site

ATTACHMENT B

California Environmental Quality Act
Substitute Environmental Document

ACRONYMS AND ABBREVIATIONS

AGR	Agricultural Supply Beneficial Use
Basin Plan	Water Quality Control Plan (Basin Plan) for the Sacramento and San Joaquin River Basins--Fourth Edition, revised October 2011
Board	California Regional Water Quality Control Board, Central Valley Region
CEQA	California Environmental Quality Act
Central Valley Water Board	California Regional Water Quality Control Board, Central Valley Region
Diamond XX	Diamond XX Ranch Estates subdivision
Discharger	Responsible parties for the Royal Mountain King Mine Site
FTR	Flotation Tailings Reservoir (WMU)
HLFZ	Hodson/Littlejohns Fault Zone
IND	Industrial Service Supply Beneficial Use
LCRS	Leachate Collection and Removal System
Meridian	Meridian Beartrack Company, current owner of the Royal Mountain King Mine Site
MUN	Municipal and Domestic Supply Beneficial Use
NPDES	National Pollution Discharge Elimination System
ODS	Overburden Disposal Site
PRO	Industrial Process Supply Beneficial Use
RMKM Remand Order	State Water Board Order WQO-2004-0007
RMKM	Royal Mountain King Mine
SED	Substitute Environmental Documentation
Site	Royal Mountain King Mine Site
State Water Board	State Water Resources Control Board
TDS	Total Dissolved Solids
WDRs	Waste Discharge Requirements
WMU	Waste Management Unit

1 INTRODUCTION AND OVERVIEW

The Royal Mountain King Mine Site (RMKM Site or Site) is a former gold mine located in southwestern Calaveras County. The Central Valley Regional Water Quality Control Board (Central Valley Water Board or Board) issued waste discharge requirements to regulate the Site in 1988, and Meridian Beartrack Company (Meridian) conducted gold mining operations at the Site from 1989 to 1994.

The purpose of this report (hereafter, Staff Report) is to present information in support of a Proposed Amendment (hereafter, Proposed Amendment) to the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan). Recognizing that the groundwater that underlies portions of the RMKM Site is of poor quality due to naturally occurring saline deposits, the Proposed Amendment would allow for the closure of the Site under less stringent closure criteria than would otherwise be applicable.

The Proposed Amendment will de-designate the municipal and domestic supply (MUN) and agricultural supply (AGR) groundwater beneficial uses in locations at the RMKM Site, specify implementation provisions that will require Meridian to continue to implement a groundwater management strategy, and establish groundwater variances for the industrial service supply (IND) and industrial process supply (PRO) groundwater beneficial uses for certain constituents. The Proposed Amendment addresses only groundwater at the RMKM Site, and is part of a comprehensive closure strategy that will focus Meridian's efforts on preventing the migration of impacts beyond the Site boundaries.

1.1 REGULATORY AUTHORITY FOR BASIN PLAN AMENDMENTS

The State Water Board and the nine Regional Water Quality Control Boards (Regional Boards) are the state agencies with primary responsibility for coordination and control of water quality. (Wat. Code, § 13001.) Each Regional Board is required to adopt a water quality control plan, or Basin Plan. The Basin Plan provides the basis for regulatory actions to protect water quality. (Wat. Code, § 13240, *et seq*.) Basin plans designate beneficial uses of water, water quality objectives to protect the uses, and a program of implementation to achieve the objectives. (Wat. Code, § 13050(j).) Basin plans, once adopted, must be periodically reviewed and may be revised. (Wat. Code, § 13240; *see also* State Water Board Order WQO 2005-0004, at 14, where the State Water Board commented that it has directed Regional Boards to, "initiate basin plan amendment procedures whenever they conclude that designated uses do not exist and are not likely to exist in the future.")

State Water Board Resolution 88-63 (*Sources of Drinking Water Policy*) states, "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards," and then provides limited exceptions to this general designation. The Central Valley Water Board incorporated the *Sources of Drinking Water Policy* into the Basin Plan. The Basin Plan states, "Unless otherwise designated by the Regional Water Board, all ground waters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO)." These designated beneficial uses, as well as the water quality objectives that are designed to provide reasonable protection of these beneficial uses, may be altered by amendments to the Basin Plan, provided that such amendments are

consistent with the policies set forth in Water Code section 13000 *et seq.* and any state policy for water quality control.

The Regional Boards adopt and amend their basin plans through a structured process involving peer review (as necessary), public participation, and environmental review. The Regional Boards must comply with the California Environmental Quality Act (CEQA) (Pub. Res. Code, § 21000 *et seq*.) when amending their basin plans. However, the Secretary of Resources has certified the basin planning process as exempt from the CEQA requirement to prepare an environmental impact report because a sufficiently rigorous environmental review is incorporated into the basin planning process itself. (Pub. Res. Code, § 21080.5.; Cal. Code Regs., tit. 14, § 15251(g).)

In order to amend the Basin Plan, the Central Valley Water Board develops what is known as substitute environmental documentation. The substitute environmental documentation contains a written report prepared for the Board (this Staff Report) that includes an environmental analysis of the project, as well as a completed Environmental Checklist (CEQA Checklist, Attachment B to this report). (Cal. Code Regs., tit. 23, § 3777(a).) The environmental analysis must include a brief description of the proposed project, an identification of any significant or potentially significant adverse environmental impacts of the proposed project, an analysis of reasonable alternatives to the project and mitigation measures to avoid or reduce any significant or potentially significant adverse environmental impacts, and an environmental analysis of the reasonably foreseeable methods of compliance. (Cal. Code Regs., tit. 23, § 3777.)

Finally, a Basin Plan Amendment for groundwater is not effective until it is approved by the State Water Board and the regulatory provisions are approved by the State Office of Administrative Law. The Central Valley Water Board first adopted the Basin Plan in 1975. The Basin Plan has been amended since that time. The current Basin Plan incorporates all new amendments approved and in effect since 1975 through October 2011.

1.2 Background and Need for Proposed Basin Plan Amendment

1.2.1 Setting of Royal Mountain King Mine Site

The RMKM Site occupies 2,100 acres and lies between approximately 900 and 1,300 feet above mean sea level in the western foothills of the Sierra Nevada in western Calaveras County (Figure 1). The Site lies between the Bear Mountains and Gopher Ridge and it is 2 to 3 miles northwest of the historic mining town of Copperopolis. The Site is located at the southern end of Salt Spring Valley, and this area (including the mine site) is known for naturally saline springs. Detailed descriptions of the geological and hydrological conditions at the Site are presented in Appendix A.

The RMKM Site is bordered to the west, southwest, south and southeast by the Diamond XX Ranch Estates subdivision (Diamond XX). The subdivision includes one hundred and eighty-four 15- to 25-acre parcels zoned rural residential. Many of the Diamond XX parcels have been developed for private residences, some supporting stock animals. The areas surrounding the Site to the northwest, north, northeast and east include several large ranches that have been used since the mid-1800s mostly for rural residential, agricultural (primarily cattle grazing) and industrial (gold mining) uses.

Other land uses in the vicinity of the RMKM Site include rural residential (typically ranchettes), ranching (cattle-grazing), and recreation (the privately owned Salt Spring Valley Reservoir and Campground). The broad grasslands, low rolling hills and shallow, meandering streambeds to the north and east of the Site change across the Site to narrow, incised streambeds between moderately steep ridges that extend westward across the Diamond XX subdivision. Zoning designations for future land uses in the vicinity of the mine site were identified by Calaveras County in 2012. The southern end of the Site is zoned as "Timberlands/Mineral Resource 2A/Dam Inundation Natural Resource Lands." The northern end of the Site is zoned as "Agricultural Preserve Natural Resource Lands." The adjacent Diamond XX subdivision is zoned as "Future Single Family Residential."

Salt Spring Valley, as the name indicates, has naturally occurring saline springs including several on the RMKM Site. One spring was associated with the former Skyrocket archaeological site which lay where Skyrocket Pit Lake is presently located. Intensive archaeological investigation of the Skyrocket site revealed evidence of "virtually continuous human occupation" dating back more than 9,000 years. (Fagan, 2003.) The historic Madame Felix mining district included the area of the Site. This area was intermittently explored and mined for gold from the mid-1800s to the mid-1900s using traditional underground lode-gold mining and ore-processing methods. The abandoned gold mining town of Hodson was located approximately where the Skyrocket Pit Lake is now.

The RMKM Site includes a segment of Clover Creek (including Clover Creek Reservoir) along its western side. However, most of the Site lies within the upper watershed of Littlejohns Creek. Approximately one mile downstream from the Site, Littlejohns Creek and Clover Creek join the north-reaching arms of Flowers Lake. Flowers Lake is located near the center of the Diamond XX Ranch Estates subdivision that lies north of Highway 4. Flowers Lake discharges to lower Littlejohns Creek. Littlejohns Creek flows south-southeastward toward Tulloch Reservoir and then turns southwestward to cross Gopher Ridge entering the eastern side of the Central Valley. Farther downstream, Littlejohns Creek is a tributary to French Camp Slough, itself a tributary to the San Joaquin River and the Sacramento-San Joaquin River Delta.

1.2.2 Changes to Royal Mountain King Mine Site from Mining Activities

Meridian mined for gold at the RMKM Site from 1989 to 1994. During active mining, three large pits were excavated to remove overburden and to reach gold ore. The pits, mined from southeast to northwest, are the Gold Knoll Pit, the Skyrocket Pit and the North Pit. Only the Skyrocket Pit and the North Pit remain open, and both are substantially filled with water. In all, seven waste management units (WMUs) were created at the Site (Figure 2). They are the 150-acre Flotation Tailings Reservoir (FTR), a 16-acre leached concentrate residue facility (closed, so not discussed further in this report), a 5.1-acre process water pond (also closed, so not discussed further in this report), the West Overburden Disposal Site (ODS), the Gold Knoll ODS, the FTR ODS, and the 55-acre Skyrocket Pit Lake. The North Pit is not classified as a WMU, and it has no surface outflow.

Meridian completely backfilled the Gold Knoll Pit, and then mounded over the Gold Knoll Pit with mining overburden removed from the other two pits. Thus, the Gold Knoll Pit became the Gold Knoll ODS. Meridian emplaced more overburden from the Skyrocket Pit and the North

Pit to form the West ODS and the FTR ODS. Together, the three ODSs contain approximately 50 million tons of waste rock, and they cover an area of approximately 197 acres.

1.2.3 Groundwater Conditions

A zone of very high-salinity groundwater within an area of metamorphosed marine sediments ("phyllite") occurs along a northwest-southeast trend in the southwestern portion of the Site and is probably a natural geological occurrence (See Attachment A, "Geological and Hydrological Setting of the RMKM Site", for further discussion). Within the mining waste materials (composed of native rock) that are located in the FTR and the three ODSs, air and water react chemically with naturally occurring minerals. These reactions produce soluble minerals (primarily salts and metals) that can leach into groundwater. The leachate commingles with naturally good-quality groundwater and naturally saline groundwater to varying degrees. Similar reactions can also occur in undisturbed bedrock, resulting in naturally saline conditions in other areas.

Groundwater samples collected from monitoring wells at the Site contain variable mixtures of common salt-forming ionic species such as bicarbonate, sulfate, chloride, sodium, calcium and magnesium. Other dissolved constituents detected in groundwater at the Site include iron arsenic, nickel, nitrate, selenium and zinc. Together, the soluble minerals comprise the total dissolved solids (TDS) level of groundwater. Of these, TDS and arsenic have the highest concentrations at the Site relative to specific water quality standards.

While differences in the hydraulic head or groundwater elevations indicate the potential for groundwater to flow, the actual directions and flow rates depend on the size, frequency, continuity, and connectivity of the fractures in the bedrock and on the proximity to manmade features such as the pits and ODSs.

Groundwater elevations have been measured and used to interpolate groundwater elevation contours between monitoring wells across the Site. From the derived contours, the general shape of the groundwater surface has been inferred. Groundwater tends to flow from higher elevations to lower elevations along a pressure gradient generally perpendicular to groundwater elevation contours. At the RMKM Site, the shape of the groundwater surface generally mimics the contours of the overlying topography. In general, good-quality groundwater found east of the Littlejohns Fault tends to flow westward, and groundwater of variable quality found west of the Littlejohns Fault flows eastward, southward and westward, depending on the location as shown on Figure 3. (SES, 2012a; SES, 2012b; SLR, 2013c.) Thus, groundwater flow paths are complex and flow rates (and water chemistry) vary across the Site. Locally, groundwater appears to flow from the areas of the FTR, the FTR ODS, and the West ODS) toward Littlejohns Creek and Skyrocket Pit Lake).

Additional background information about the geological and hydrological conditions at the RMKM Site is presented in Appendix A.

1.2.4 Regulatory History of Royal Mountain King Mine Site

The Central Valley Water Board has regulated groundwater and surface water discharges at the RMKM Site since 1988. The Board regulated discharges at the Site through the issuance of waste discharge requirements (WDRs), which implemented provisions of Title 27 of the California Code of Regulations (hereafter, Title 27). Under Title 27's mining waste

classification system, Group B mining wastes include those wastes that, "… consist of or contain nonhazardous soluble pollutants of concentrations which exceed water quality objectives for, or could cause, degradation of waters of the state." (Cal. Code Regs., tit. 27, §2280(b)(2).) Group C mining wastes, on the other hand, are defined as those wastes "from which any discharge would be in compliance with the applicable water quality control plan…" (Cal. Code Regs., tit. 27, §2280(b)(3).) From 1988 through 2001, the Board classified the mining wastes in the three ODSs as Group C mining waste because these wastes did not generate acid mine drainage or contain hazardous waste. Title 27 does not require Group C WMUs to have low-permeability covers, bottom liners, or other engineered containment features. As a result, the ODSs were constructed without these containment features.

However, in 2001, seven years after Meridian finished mining operations, the Central Valley Water Board found that new evidence indicated that the material in the ODSs could leach soluble minerals to groundwater at concentrations that exceed water quality objectives associated with the MUN and/or AGR beneficial uses, and reversed its Group C classification determination. Though some of the underlying groundwater was of poor quality due to naturally occurring geologic conditions, the Board nonetheless found that leachate from the ODSs could cause groundwater to contain elevated concentrations of TDS and sulfate.

The Board then reclassified the material in the three ODSs from Group C mining waste to Group B mining waste. (Revised WDRs Order R5-2001-040 and Cease and Desist Order (CDO) R5-2001-0041.) This reclassification required Meridian to comply with significantly more stringent mine closure requirements.

Meridian petitioned the State Water Board to review Revised WDRs Order R5-2001-040 and CDO R5-2001-041. The State Water Board received the petition and issued a stay, which precluded the Central Valley Water Board from enforcing the new orders. However, in 2003, the Central Valley Water Board issued Revised CDO R5-2003-0055. The Revised CDO required that Meridian comply with Group B closure requirements, and compelled Meridian to cease discharges to surface waters and to provide financial assurances.

Meridian petitioned the State Water Board to review the new CDO. After considering the merits of the petition, the State Water Board issued WQO-2004-0007 (*RMKM Remand Order*). (SWRCB, 2004a.) The State Water Board made several findings with respect to the elevated concentrations of TDS and other inorganic constituents in the groundwater. The State Water Board found that although large-scale mining activities increased the amount of leachable salts and other minerals as water passes through the mining wastes in the ODSs, other factors, including the naturally occurring presence of salt-bearing geologic formations at the Site, contributed to the poor quality of water. The State Water Board concluded that although the ODSs do result in "statistically significant increases of some inorganic constituents," naturally occurring groundwater quality was poor enough to merit a re-evaluation of whether it was appropriate for the Basin Plan to regard all of the groundwater underlying the Site as supporting a full range of beneficial uses.

In the *RMKM Remand Order*, the State Water Board also opined as to efficacy of the groundwater protection strategy that the Central Valley Water Board was pursuing at the time (a "cover-only" strategy that would not require the installation of a liner), as well as the practicability of installing a liner at the Site. The State Water Board estimated that a cover built to Title 27 standards would cost approximately $30 million, but that the "cover-only" concept would be ineffective without either the installation of subsurface groundwater cutoff walls

(which themselves could result in additional groundwater impacts) or the installation of low-permeability liners beneath the 50 million tons of mining overburden stockpiles. Due to the massive amount of mining waste that would need to be temporarily relocated, the installation of clay liners could cost well over $100 million. Considering these costs, along with the fact that groundwater at portions of the Site was already of poor quality due to naturally occurring geologic conditions, the State Water Board reasoned that the Central Valley Water Board should pursue an "alternative approach to mine closure."

The State Water Board stated that an alternative approach could potentially include the de-designation of beneficial uses at the RMKM Site (if appropriate) or the establishment of a groundwater containment zone. The State Water Board reasoned that if conditions warranted de-designation, the Central Valley Water Board could legally reclassify the overburden disposal sites as Group C mining wastes. That, in turn, would subject the Site to the less stringent Title 27 regulations that apply to Group C mining wastes.

In the years since the State Water Board issued the *RMKM Remand Order*, the Central Valley Water Board has issued a National Pollution Discharge Elimination System (NPDES) Permit to allow for controlled discharges of water from Skyrocket Pit Lake to Littlejohns Creek during periods of high seasonal baseline creek flow. (WDRs Order R5-2013-0071, NPDES Permit CA0085243.) The Central Valley Water Board has also prescribed closure WDRs under Title 27 for the RMKM Site (Order R5-2008-0021), though the ultimate issue of how Meridian would implement closure operations to protect groundwater over the long-term was not settled in these Orders.

The Central Valley Water Board has found that it cannot effectuate closure of the RMKM Site consistent with the State Water Board's *RMKM Remand Order* without amending the Basin Plan. This Staff Report analyzes the options for altering the Basin Plan to provide for the closure of the Site in a manner that will protect groundwater and surface waters to the maximum extent feasible.

1.2.5 Justification for a Basin Plan Amendment

The Basin Plan's beneficial use designations play a fundamental role in the regulation of water quality within the Central Valley Region; the Basin Plan states that the "[p]rotection and enhancement of existing and potential beneficial uses are primary goals of water quality planning." The Board has the responsibility to ensure that waters within its jurisdiction are of sufficient quality to support the beneficial uses designated in the Basin Plan. The Board ensures that these uses are protected by developing water quality objectives that are defined as "...the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." (Wat. Code, § 13050 (h).) In turn, the Basin Plan states "[water quality] objectives are to be achieved primarily through the adoption of waste discharge requirements (including permits) and cleanup and abatement orders."

However, when the Board adopted the Basin Plan, it did not conduct an exhaustive survey of all of the groundwater and surface waters in the Region prior to designating beneficial uses. Instead, the Board chose to make basin-wide designations that generally designated all of the waters within the region as supporting a suite of beneficial uses: MUN, AGR, IND, and PRO. These basin-wide designations did not recognize that certain beneficial uses may not be attainable in areas where conditions are not expected to support these uses.

Although the Board does not generally require improvement over background water quality when it issues waste discharge requirements and cleanup and abatement orders, the beneficial use designations remain relevant even when only some of the constituents meet water quality objectives. For example, if water designated as supporting the MUN beneficial use has naturally occurring concentrations of just one constituent that would render it unfit for human consumption if untreated, waste discharge requirements would nonetheless require a discharger to meet the host of other water quality parameters relevant to the MUN designation (i.e., waste discharge requirements would set limitations at least stringent enough to protect primary and secondary maximum contaminant levels for the other constituents).

Consistent with the *RMKM Remand Order* and State Water Board precedent, this Staff Report evaluates the currently-designated beneficial uses of groundwater. After evaluating all relevant evidence, this Staff Report concludes that de-designation of certain beneficial uses is warranted at portions of the RMKM Site. In addition, Meridian has submitted information to show that the current groundwater management strategy is sufficient to contain groundwater impacts associated with Meridian's mining activities within the proposed de-designation area. (SLR, 2013a.)

2 CHANGES TO GROUNDWATER BENEFICIAL USES AT THE RMKM SITE

The Basin Plan generally considers all groundwater in the Central Valley Region, including the groundwater beneath the RMKM Site, as suitable, or potentially suitable, for municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO). However, groundwater data gathered at the Site since before Meridian commenced mining operations indicate that naturally occurring conditions do not support this full range of beneficial uses throughout the Site. In the *RMKM Remand Order*, the State Water Board determined that it is not appropriate for the Central Valley Water Board to require Meridian to protect beneficial uses that may have never been supported at the Site. The Proposed Amendment would de-designate certain beneficial uses at portions of the Site, thereby allowing the Central Valley Water Board to take a more pragmatic approach for the ultimate closure of the Site, while still maintaining regulatory protection for good-quality groundwater in the vicinity of the Site.

Though the protection and enhancement of existing and potential beneficial uses are the primary goals of water quality planning, the Board can remove beneficial use designations when waters do not in fact support the beneficial use designations delineated in the Basin Plan, and where these waters have not historically been utilized for a particular beneficial use. A close analysis of the groundwater data collected at the RMKM Site indicates that groundwater at portions of the Site does not support all of the designated beneficial uses, and that de-designation of some beneficial uses at these portions of the Site is a practical and scientifically supported means to allow regulatory closure of the Site in conformance with law.

The Proposed Amendment seeks to give the RMKM Site needed regulatory resolution while preserving beneficial uses at the Site where information indicates that those uses have historically been utilized.

2.1 De-designation of Municipal and Domestic Supply (MUN)

Areas of the RMKM Site do not support the MUN beneficial use because naturally occurring groundwater contains elevated levels of salinity constituents, including TDS. Meridian has also constructed WMUs at the Site that overlie, or are contiguous to, areas where naturally occurring poor-quality groundwater is found. Though the groundwater beneath these WMUs and in their immediate downgradient vicinity may be of higher quality than the de-designation criteria in the *Sources of Drinking Water Policy*, the Board proposes to de-designate the MUN beneficial use in these areas in order to allow Meridian to implement a reasonable closure plan in accordance with the *RMKM Remand Order*.

The MUN beneficial use is defined in the Basin Plan as “[u]ses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.” The Central Valley Water Board has no information that groundwater in the proposed de-designation area has been used for municipal or domestic water supply, which is not unusual, due to the generally low quality of this groundwater and due to the fact that there has not been a great deal of demand for municipal or domestic water supply in this area. Information regarding the groundwater quality and quantity in wells near the Site was provided by the Calaveras County Environmental Management Agency, Environmental Health Department, Agency Administrator, Department Director (Moss, 2011), and the Calaveras County Water District, Water Resources Manager (Pattison, 2011). Both parties indicated that groundwater

quality and quantity in the vicinity of the Site is highly variable. In particular, they noted that water in some wells was initially saline, or became saline after some period of use, and that some wells have gone dry. More information regarding groundwater use is included in Appendix A.

Groundwater quality data has been collected at the RMKM Site from 1987 (prior to Meridian's mining operations), throughout the mining operations, and up to the present (during ongoing post-mining closure activities). This data indicates that groundwater in some areas has historically contained levels of TDS in excess of 5,000 mg/L and, within a more limited area, in excess of 10,000 mg/L (see Figure 4). These levels of TDS in groundwater do not support the MUN beneficial use as indicated by the criteria in the *Sources of Drinking Water Policy*.

2.1.1 Sources of Drinking Water Policy

The *Sources of Drinking Water Policy* establishes the state policy that "All surface and ground waters of the State are considered suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of…[g]round waters where:

> The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or
>
> There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
>
> The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day."

The *Sources of Drinking Water Policy* does not establish water quality objectives, nor does it address other beneficial uses of groundwater (e.g., AGR, IND or PRO). The *Sources of Drinking Water Policy* has been incorporated by the Central Valley Water Board into the Basin Plan. When the *Sources of Drinking Water Policy* was adopted, the State Water Board recognized that, "[t]he Water Quality Control Plans do not provide sufficient detail in the description of water bodies designated MUN to judge clearly what is, or is not, a source of drinking water for various purposes."

This Staff Report provides the additional detail needed to more clearly describe actual MUN uses within the Site, and concludes that groundwater beneath and immediately downgradient of the WMUs at the Site is not being, nor is it likely to be, utilized for MUN either due to the poor quality of the groundwater or due to the placement of mine waste in the units.

Additional information regarding groundwater use is included in Appendix A. The following section presents alternatives to de-designation of the MUN beneficial use in areas of the Site.

2.1.2 Alternatives for De-designation of the MUN Use

The alternatives presented below address possibilities for revising the MUN beneficial use in groundwater to reflect the high TDS levels at the RMKM Site and to recognize that groundwater beneath and immediately downgradient of the WMUs at the Site likely will not be

utilized as a municipal or domestic supply. The alternatives also consider the findings and conclusions of the *RMKM Remand Order*.

2.1.2.1 *Alternative 1: No Action*

The Basin Plan currently designates all of the groundwater at the Site as supporting the MUN beneficial use, even though the Board has evidence that groundwater in portions of the RMKM Site has never been of high enough quality to support this use. If the Board chose not to amend the Basin Plan, the Board would require Meridian to both eliminate future groundwater discharges from the WMUs that could cause exceedances of water quality objectives associated with the MUN beneficial use, and to rectify any water quality impairments that have already occurred. [2]

This scenario is not adequately addressed by the Basin Plan (which would be unaltered under the No-Action Alternative), because the Basin Plan and the applicable regulations presume that the Board will mandate covers and liners for WMUs that are expected to contain wastes that could cause impacts to underlying groundwater. And, under a prior interpretation of the Basin Plan that did not account for impacts that could occur due to salinity constituents, the Board chose not to impose these requirements at the RMKM Site. It is now impossible to revisit this determination, because approximately 50 million tons of waste rock has already been placed within the WMUs. It is also cost-prohibitive and of questionable environmental value for the Board to require Meridian to capture and treat all of the leachate that seeps from the bottom of the WMUs. For example, if reverse osmosis (a candidate technology) were to be implemented as a treatment technology, Meridian would need to build a large, energy-intensive treatment plant (with attendant greenhouse gas production) that would produce a substantial waste stream that would need to be managed on or off site. These conclusions are supported by an investigation that Meridian conducted in 2006, which found that both the redisposal option and other alternatives to improve groundwater quality would either be ineffective or prohibitively expensive. (SES, 2006.)

The other major problem with the No-Action Alternative is that the Basin Plan currently requires that dischargers who have impacted groundwater rectify these groundwater impacts, and this is also cost-prohibitive and of questionable environmental value, given the relatively poor quality of the underlying groundwater. As stated in the State Water Board Technical Report (SWRCB/OCC File No. A-1569) “it is very likely that restoration efforts would not only be extremely expensive, but may even exacerbate any TDS impacts caused by the mine… [and] … to remove salt from the groundwater, the Discharger would need to pump groundwater and treat the extracted water with reverse osmosis, an expensive, energy-intensive remedial measure that would generate a waste brine that would likely be 3 to 10 times saltier than the extracted groundwater.”

Given that the WMUs will not be reconstructed, that the capture and treatment of the leachate is not feasible, and that the cost of extracting and treating affected groundwater would be

[2] It is evident that wastes that have been placed in the WMUs have caused impacts to underlying groundwater, a fact recognized in the *RMKM Remand Order*: “[d]espite poor background water quality conditions in portions of the RMKM Site, surface water and groundwater flowing from the overburden disposal sites contain statistically significant increases of some inorganic constituents. Groundwater seeping from the base of the overburden disposal sites still exceeds water quality objectives for TDS and some dissolved metal ions...”

wildly disproportional to the environmental benefit that it would bring, the most reasonable way of managing groundwater at the Site is to ensure that impacts from the WMUs will not spread. However, under the No-Action Alternative, the only applicable policy that countenances the persistence of impacted groundwater is State Water Board Resolution 96-79 (*Containment Zone Policy Amendment to Resolution 92-49*), which allows the Regional Boards to incorporate "containment zones" (hydrologically-isolated areas of impacted waters) into cleanup and abatement orders issued pursuant to Water Code section 13304. However, the "containment zones" in the *Containment Zone Policy* are intended to be temporary, and the Board is also required to issue a Cleanup and Abatement Order to effectuate the provisions of the *Containment Zone Policy*. For both of these reasons, the *Containment Zone Policy* does not provide the Board with an effective solution.

Nonetheless, the strategy embodied in the *Containment Zone Policy Amendment* is sound; ensuring that impacts do not spread is an appropriate and reasonable way of regulating the closure of the RMKM Site. However, the only way to incorporate this strategy into closure WDRs is to alter certain currently-applicable regulatory requirements in the Basin Plan that require dischargers that have impacted groundwater to both ensure that there are no future impacts and to rectify these impacts. Instead of imposing these traditional regulatory requirements, the Board could eliminate nonexistent beneficial uses in a limited area and concurrently adopt an implementation strategy designed to ensure that groundwater impacts do not spread (which is exactly what is being proposed in this Staff Report). However, this approach could not be authorized under the No-Action Alternative.

2.1.2.2 *Alternative 2: De-designate MUN Use where TDS Levels Currently Exceed 3,000 mg/L*

Under this alternative, the Board would de-designate the MUN beneficial use of groundwater only where TDS levels have been detected at levels exceeding the *Sources of Drinking Water Policy* exception criterion of 3,000 mg/L (Figure 4). This alternative minimizes the total area of the RMKM Site where the MUN use would be de-designated (approximately 250 acres), but it leaves the MUN use intact in areas where poor-quality groundwater is likely to be found within the Site. Though data are not available to definitively delineate all groundwater pockets with TDS levels greater than 3,000 mg/L, such pockets likely exist. For example, groundwater quality data from underneath the WMUs are not available, but since the leachate and upwelling spring water adjacent to most WMUs is above 3,000 mg/L, it is likely that the underlying groundwater of those WMUs has comparable levels of TDS.

Strictly limiting de-designation to areas where TDS in groundwater have been detected to exceed 3,000 mg/L fails to recognize that groundwater beneath the WMUs at the Site is not, and likely will not, be used for MUN. This is due, in part, to the potential for leachate to impact the quality of groundwater beneath the unlined WMUs. Furthermore, Title 27 requirements direct that no land uses are to be permitted on WMUs that might impair their physical integrity. This requirement will practically exclude any well installation beneath the WMUs for MUN supply purposes.

Groundwater quality assessments based on sample results acquired from monitoring wells adjacent to the WMUs could be used to extrapolate groundwater quality in the areas beneath and immediately downgradient of the WMUs, and this could be used to justify the de-designation of the MUN beneficial use in some areas. An alternative that does not allow for

this extrapolation is likely to be viewed as contrary to the directives of the *RMKM Remand Order* and would likely require Meridian to reconstruct the ODSs to Title 27 prescriptive standards.

2.1.2.3 *Alternative 3: De-designate MUN Use within Entire RMKM Site*

Under this alternative, the Board would amend the Basin Plan to de-designate the MUN use of groundwater throughout the RMKM Site, up to the Site's boundaries. Groundwater in areas of the Site has TDS levels that exceed 3,000 mg/L, meeting one of the current *Sources of Drinking Water Policy* exception criteria. However, implementing this alternative would eliminate MUN protection for areas of good-quality groundwater that are unaffected by discharges from the Site, and would mean that the Board would cease regulating the impact of MUN-related constituents on groundwater throughout the Site.

Though simply de-designating the MUN beneficial use of groundwater throughout the Site could be an administratively convenient way of eliminating regulatory impediments to closure, such a de-designation would be overly broad. Areas of relatively good-quality groundwater in the eastern and northwestern portions of the Site should not be de-designated, as groundwater in these areas could potentially support the MUN beneficial use, and the de-designation of these areas would not serve any meaningful regulatory purpose, as these areas are upgradient of the mining features at the Site. In addition, the Board would still need to ensure the protection of groundwater in areas beyond the Site's borders, which could require additional groundwater quality surveys. For these reasons, this is not a preferred alternative.

2.1.2.4 *Alternative 4: De-designate the MUN Use in Limited Portions of the Site (the Area Delineated in Figure 5)*

Under this alternative, the Board would de-designate the MUN beneficial use of groundwater in the following areas:

1) Where TDS levels have been detected exceeding 3,000 mg/L;
2) Beneath the five WMUs that have not been closed; and
3) Immediately downgradient of the five WMUs that have not been closed.

Areas outside of the shaded area in Figure 5 would continue to be protected for the MUN use.

This alternative would de-designate the MUN beneficial use of groundwater at about one-third (approximately 720 acres) of the RMKM Site. It would likely leave the MUN use applied to unidentified areas of poor-quality groundwater outside the de-designation area, since groundwater data are not available to definitively delineate all groundwater pockets with TDS levels greater than 3,000 mg/L. However, this alternative recognizes that groundwater beneath much of the mining waste either is of poor quality, whether due to saline leachate or naturally saline conditions, or will not support MUN use due to the fact that the Board can reasonably conclude that groundwater beneath and immediately downgradient of unlined WMUs will not be utilized for municipal and domestic supply purposes.

This approach is not only consistent with the *RMKM Remand Order*, but it relies on a reasonable and cost-effective regulatory approach. Under this alternative, the Board would continue to protect the MUN use in areas around the WMUs where that use is actually supported, and therefore the focus of Meridian's closure efforts would be on staying in

compliance with the terms of the NPDES Permit and the closure WDRs. In addition, this approach is consistent with the Title 27 requirements that would prohibit any activities on WMUs that might impair their physical integrity (such as drilling a water supply well).

2.1.3 Recommended Alternative for De-designation of the MUN Use

Staff recommends Alternative 4. This alternative limits the de-designation of the MUN beneficial use in groundwater to only those portions of the Site where the current designation interferes with closure objectives. The Board will maintain MUN protections in other areas of the Site, which will require Meridian to continue to implement its current groundwater management strategy to ensure that uses outside this area are protected. By implementing the recommended alternative, the Board meets the goals of the *RMKM Remand Order*, thereby allowing Meridian to focus its resources on other aspects of Site closure.

2.2 De-designation of Agricultural Supply (AGR)

Groundwater in areas of the Site does not support an unrestricted range of AGR beneficial uses due to naturally occurring geologic conditions that result in elevated levels of salinity constituents, including TDS. The AGR beneficial use is defined as, "[u]ses of water for farming, horticulture, or ranching, including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing." This broad definition distinguishes the AGR beneficial use from the MUN use; while limits protective of human health are relatively well-defined (such as the Primary MCLs), water quality limits developed to protect AGR uses range from the very stringent standards necessary to protect salt-sensitive crops, such as strawberries and stone fruits, to the relatively lenient standards necessary to protect salt-tolerant uses such as livestock watering.

Protecting the AGR beneficial use in groundwater, therefore, requires site-specific inquiries that consider, among other things, the agricultural practices in the vicinity of a particular site and the ability of the groundwater to support those uses. Board staff has investigated the historic and current AGR uses on the Site, and has determined that certain AGR uses, such as growing salt-sensitive crops, have not historically occurred on the Site and cannot be sustained by groundwater at all portions of the Site. The only type of AGR use that has historically been present on the Site and needs protection is stock watering, which does not rely on low TDS water. The National Academy of Sciences published "A Guide to the Use of Saline Waters for Livestock and Poultry" that lists the potential effects of TDS on livestock at concentration levels ranging to over 10,000 mg/L. Water with TDS levels that range up to 5,000 mg/L can support livestock watering for cattle, sheep, swine and horses. (NAS, 1974, Table 10.)

The predominant agricultural activity in the vicinity of the RMKM Site has been low-intensity cattle grazing. Meridian has provided information that the "Stock Pond", other small ponds, and the "windmill well" may have historically provided water for livestock watering east of Littlejohns Fault. (SES, 2012a.) Groundwater monitoring data indicate that groundwater in other areas of the Site is of such low quality that it may not reasonably be expected to support any known AGR uses.

The following is an evaluation of the regulatory approaches for addressing the AGR beneficial use at the RMKM Site in the context of the ultimate closure of the mine.

2.2.1 Alternatives for De-designation of the AGR Use

The Proposed Amendment recognizes that poor-quality groundwater in some areas of the Site might not support any known AGR uses. The Proposed Amendment also recognizes that groundwater quality in some areas of the Site has historically supported cattle watering. The alternatives presented below describe how the Board could maintain protections for the AGR beneficial uses in some areas of the Site.

The Basin Plan (at page II-3.00) provides that the Board can make exceptions to the AGR beneficial use designation using certain criteria, which include, but are not limited to, the following: (1) "There is pollution, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for agricultural use using either Best Management Practices or best economically achievable treatment practices," or (2) "The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day."

2.2.1.1 *Alternative 1: No Action*

Due to high TDS levels in groundwater, AGR uses cannot be sustained in some areas of the Site. If the Board took no action, then the Board would be required to evaluate the types of agricultural activities that are supported by groundwater at different areas of the Site before implementing regulatory measures at the Site. This means that when the Board issues orders (such as waste discharge requirements) for activities on the Site, it could impose site-specific limitations for groundwater that are developed to protect agricultural activities in the vicinity of the Site. However, a basin plan amendment is a more appropriate means for de-designating the beneficial use in areas where the Board finds that the groundwater does not support any known AGR beneficial use.

Though the Basin Plan does not require the Central Valley Water Board to "require improvement over naturally occurring background concentrations," if the Board took no action with respect to modifying the AGR beneficial use for groundwater at the Site, two issues arise. First, because groundwater in some areas of the Site does not support any known AGR use, it is not reasonable for the Board to continue to evaluate whether discharges are sufficiently protective of the non-existent beneficial use every time a permit came up for renewal and/or modification. Second, groundwater in other areas of the Site is still of relatively poor quality, which means that a site-specific objective for groundwater would need to be developed and/or re-evaluated every time the Board renews discharge permits issued to regulate activities at the Site.

As is the case with the MUN No-Action Alternative evaluation, the AGR No-Action Alternative would be contrary to the findings and directive in the *RMKM Remand Order* and would not offer additional benefit to anyone who would use existing poor-quality groundwater. (See the discussion of the MUN No-Action alternative, *supra*.) For these reasons, the AGR No-Action Alternative is not recommended.

2.2.1.2 *Alternative 2: De-designate AGR Use within Entire Site*

Under this alternative, the Board would de-designate the AGR beneficial use of groundwater throughout the entire Site. Regulatory measures affecting the Site would not need to protect any AGR beneficial use of groundwater, though the Board would still need to ensure that

groundwater that remains designated as supporting the AGR beneficial use (such as groundwater outside of the boundaries of the Site) is protected.

However, de-designation of the AGR beneficial use of groundwater throughout the entire Site would not be consistent with State and Regional Water Board policies, because groundwater in some areas currently supports, and has historically supported, a limited range of AGR uses. It would be inappropriate for the Board to eliminate AGR beneficial use protections of groundwater in areas where the use is currently supported.

2.2.1.3 *Alternative 3: De-designate AGR Use only in Areas where TDS is Greater than 5,000; Concurrently Adopt a Site-Specific Objective for Stock Watering for the Rest of Area Delineated in Figure 5*

Under this alternative, the Board would de-designate the AGR beneficial use of groundwater in areas of the RMKM Site where TDS exceeds 5,000 mg/L, as these groundwaters cannot support any known agricultural use, including stock watering (Figure 4). However, simply de-designating the AGR use in areas where TDS exceeds 5,000 mg/L would not address the groundwater that is beneath the West ODS, the FTR, and the FTR ODS, or the groundwater in those areas immediately downgradient of these WMUs (between the WMUs and Skyrocket Pit Lake), because at least some of this groundwater has TDS concentrations less than 5,000 mg/L. This means that this groundwater could still theoretically support a limited range of AGR uses. However, if the Board is to take the “alternative compliance” route required by the *RMKM Remand Order*, then the AGR-related regulatory requirements currently imposed by the Basin Plan must still be altered for groundwater in these areas, too. To facilitate a reasonable closure of the Site under an alternative approach, as mandated by the *RMKM Remand Order*, the Board would only need to set a site-specific objective for the AGR beneficial use in groundwater for limited portions of the Site – beneath and immediately downgradient of the West ODS, the FTR, and the FTR ODS.

The Board has evidence that, when groundwater TDS concentrations range between 3,000 mg/L and 5,000 mg/L, this water can only be utilized for one specific AGR use: stock watering. Furthermore, there is evidence that at least some groundwater beneath the West ODS, the FTR, and the FTR ODS, and in those areas immediately downgradient of these WMUs is between 3,000 mg/L and 5,000 mg/L TDS. This means that this water could potentially support livestock watering. One option to address this groundwater would be for the Board to use the Basin Planning process to set a site-specific TDS water quality objective of 5,000 mg/L in these areas.

However, this approach is problematic. First, the Board does not have sufficient information to delineate an area of the Site where TDS concentrations in groundwater range between 3,000 mg/L and 5,000 mg/L, and conducting additional groundwater surveys and developing a site conceptual model to delineate these areas would be unwarranted. Even if the Board were to conduct such an investigation, the site-specific objective would be put in place only to provide limited protection in areas of the Site where it would be unreasonable to install a groundwater well to provide water for livestock. Furthermore, neither Meridian nor any other reasonable landowner would install a well through a mining waste repository to provide water for livestock. Title 27 regulations would also prohibit the installation of a well in most of these areas, as it would interfere with the integrity of the WMUs.

The second problem with developing a site-specific objective for TDS in groundwater to protect stock watering is that it is likely that some of the groundwater beneath the West ODS, the FTR, and the FTR ODS has concentrations of TDS below 3,000 mg/L, rendering it potentially suitable for additional AGR uses. Though the extent of this relatively good-quality groundwater within this area is limited, if the Board were making beneficial use determinations strictly on the basis of what AGR uses could be supported by pockets of relatively good-quality groundwater (i.e., if the Board were to ignore the presence of the WMUs or the overall strategy for achieving closure of the Site in making modifications to the Basin Plan), then the Board would need to conduct additional research into the types of AGR uses that could be supported in these areas.

Conducting an exhaustive survey to define limited AGR protections beneath and immediately downgradient of large WMUs (the only areas where such a definition is needed to support a Group C waste classification) is unwarranted in light of the fact that doing so would only be to support the protection of groundwater beneath and immediately downgradient of mining waste WMUs for AGR uses. Therefore, this is not the preferred alternative.

2.2.1.4 *Alternative 4: De-designate AGR Use in Area Delineated in Figure 5*

Under this alternative, the Board would de-designate the AGR beneficial use of groundwater in an area of the Site that is co-extensive with the MUN de-designation area delineated in Figure 5 and described above in Section 2.1.2.4.

The MUN de-designation area is based on the area where TDS in groundwater is greater than 3,000 mg/L and areas under and immediately downgradient of the WMUs that have not been closed. This alternative would de-designate the AGR use of groundwater at about one-third (approximately 720 acres) of the RMKM Site, and would maintain existing groundwater protections where beneficial uses have not been de-designated. It may leave the AGR use applied to unidentified areas of poor-quality groundwater outside the de-designation area since groundwater data is not available to definitively delineate all areas, when such variability is known to exist at the Site. However, it recognizes that AGR use is based on a broad set of factors, and groundwater beneath the WMUs that have not been closed is not and likely will not be utilized for AGR use. This alternative recognizes that groundwater beneath much of the mining waste is likely to be of poor quality, whether due to saline leachate or naturally saline conditions, or will not support AGR use due to the fact that the Board can reasonably conclude that groundwater beneath and immediately downgradient of unlined WMUs will not be utilized for agricultural purposes.

This approach is not only consistent with the *RMKM Remand Order*, but it relies on a reasonable and cost-effective regulatory approach. Under this alternative, the Board would continue to protect the AGR use in areas around the WMUs where that use is actually supported, and therefore the focus of Meridian's closure efforts would be on staying in compliance with the terms of the NPDES Permit and the closure WDRs. In addition, this approach is consistent with the Title 27 requirements that would prohibit any activities on WMUs that might impair their physical integrity (such as drilling an agricultural supply well).

2.2.2 Recommended Alternative for De-designation of the AGR Use

Staff recommends Alternative 4**.** This alternative will de-designate AGR in those areas of the Site where levels of TDS in groundwater would not support any known AGR uses, and in limited areas where it is unlikely groundwater will ever be used for AGR purposes (i.e., those areas beneath and immediately downgradient of the WMUs which have not been closed. , and therefore limits the de-designation of the AGR beneficial use in groundwater to only those portions of the Site where the current designation interferes with closure objectives. The Board will maintain AGR protections in other areas of the Site, which will require Meridian to continue to implement its current groundwater management strategy to ensure that uses outside this area are protected. By implementing the recommended alternative, the Board meets the goals of the *RMKM Remand Order*, thereby allowing Meridian to focus its resources on other aspects of Site closure.

2.3 Industrial Service Supply (IND) and Industrial Process Supply (PRO)

The IND and PRO beneficial uses are vaguely defined in the Basin Plan. The IND beneficial use is defined as, "[u]ses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization." The PRO beneficial use is defined as, "[u]ses of water for industrial activities that depend primarily on water quality." While the IND use does not necessarily require that water be of any particular quality, PRO uses such as silicon wafer manufacturing can require exceptionally high-quality water.

The only industry that has occurred in the vicinity of the Site has been industrial activities related to operations at the mine itself. According to a consultant for the mining company (SES, 2012.):

> During the period of active mining at RMKM, groundwater that seeped into the pits (Gold Knoll, Skyrocket and North Pit) was removed and used for mining-related applications. The majority of water was used as process water for various different phases in the mining process. The flotation circuit includes crushing and grinding the ore to a silt-sized material in slurry. Water was used to make the slurry. Following this, the ground ore went into a flotation circuit where the gold particles were separated and concentrated. The residue went to the FTR as slurry; the solids settle out and the water is re-used. The concentrate is also moved as a slurry; the gold is extracted by a cyanide solution added to the concentrate slurry, then the ore residue is sent to the leached concentrate residues facility where the solids separate and the water is re-used. Groundwater was makeup water for what was lost to evaporation and by storage in the settled tailings. Lesser amounts of water were also used in dust control, primarily through application on unpaved haul roads and waste disposal areas.

Board staff reviewed regulatory files for the Site and found no record of groundwater in the vicinity of the Site having been used for any IND or PRO beneficial use, except for the mine's usage of this water described above. In addition, during a community outreach session that was conducted during the "scoping" period of the Basin Planning process, no one in the surrounding community professed any knowledge of any industry that has relied on high-quality groundwater in the vicinity of the Site for any industrial process. This is to be expected,

as the quality of groundwater within the proposed de-designation area would not be expected to supply any industry use that was dependent on high-quality water. However, this does not mean that the groundwater could not be used for IND and PRO uses that are not dependent on high-quality water.

The Basin Plan states that, "[i]n making exceptions to the beneficial use designation of industrial supply (IND or PRO), the Regional Water Board will consider the following criteria: There is pollution, either by natural processes or by human activity … that cannot reasonably be treated for industrial use using either best management practices or best economically achievable treatment practices, or the water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day." The only industry that has utilized groundwater within the proposed zone of de-designation has been historic and recent mining. These operations have ceased, and are not planned to resume. Groundwater pumped from at least two production wells and from the mining pits as they were dewatered during excavation was used for mining and ore beneficiation processes and for dust control. (SES, 2012.)

The alternatives presented below address the IND and PRO designations at the Site.

2.3.1 Alternatives for Addressing the IND and PRO Uses

IND and PRO uses include fabricating, processing, washing, diluting, cooling, sanitizing, transporting a product, and incorporating water into a product. Some industries that use large amounts of water produce such commodities as food, paper, chemicals, refined petroleum, or primary metals. Other industrial uses for high-quality water include thermoelectric power production, oil refining, fertilizer production and other chemical plant use, food processing, electronics (semiconductor manufacturing), optical equipment, new materials manufacturing, and manufacturing medicines, pharmaceutical and biotechnological materials. (Kenny et al., 2009.)

High TDS levels limit the utilization of the groundwater at portions of the Site for the full range of the IND and PRO uses. However, groundwater within the entire Site could be used for a limited range of the IND and PRO uses that don't rely on high-quality waters.

2.3.1.1 *Alternative 1: No Action*

The current groundwater conditions do not support a wide range of IND and PRO beneficial uses throughout the entire Site. TDS levels above 10,000 mg/L have been detected in groundwater in some areas. High TDS levels render the groundwater unusable for IND and PRO uses that rely on high-quality water. Under this alternative, the Board would not alter the current use designations for IND and PRO at the Site.

If the Board took no action, then the Board would be required to evaluate the full range of IND and PRO uses supported by groundwater at different areas of the Site prior to implementing regulatory measures at the Site. Any such regulatory measures imposed by the Board would need to protect either the IND or PRO uses of groundwater that the Board has determined can be supported in particular areas of the Site, or, where background groundwater quality conditions are not sufficient to support any IND or PRO uses, to maintain those naturally occurring background levels.

2.3.1.2 *Alternative 2: De-designate IND and PRO Uses in the Area Delineated in Figure 5*

Under this alternative, the Board would de-designate the IND and PRO beneficial uses of groundwater where MUN and AGR uses of groundwater are proposed for de-designation (Figure 5). However, even very low quality water can still be used for limited IND and PRO uses such as hydraulic conveyance, gravel washing, and fire protection. Therefore, it would be inappropriate to de-designate all IND and PRO uses of groundwater in these areas at the Site.

2.3.1.3 *Alternative 3: Establish a Variance for IND and PRO Uses in the Area Delineated in Figure 5*

Because there have been historic industrial uses of the groundwater at the Site, the Proposed Amendment should not de-designate the IND and PRO beneficial uses of groundwater, but will instead proposes to set variances for these uses. However, a suite of naturally occurring constituents limits the attainment of the full range of IND and PRO beneficial uses of groundwater at the Site.

One way to address this situation is to adopt variances that would essentially require the Board, when taking regulatory actions to protect the IND and PRO beneficial uses of groundwater at the Site, to disregard this suite of naturally occurring constituents. In other words, the Board will only protect those IND and PRO beneficial uses of groundwater that do not require any specific water quality with respect to this suite of constituents.

This approach recognizes that the groundwater in areas where MUN and AGR uses are proposed for de-designation (Figure 5) cannot be utilized for a full range of IND and PRO uses due to the presence of elevated levels of TDS, arsenic, and several other constituents shown on the table below, but that IND and PRO uses of groundwater that are not limited by high concentrations of these constituents should still be protected.

<u>Constituents subject to the variance</u>

Total Dissolved Solids
Arsenic
Chloride
Nitrate
Selenium
Sulfate

Establishing a variance in the Basin Plan for the IND and PRO uses of groundwater at portions of the Site would maintain the current level of groundwater protection within the area delineated in Figure 5, but would not require improvement over background concentrations.

This alternative would be more protective of groundwater within the area delineated in Figure 5 than an alternative that would remove all IND and PRO protections, but this alternative would still not affect the closure of the mine site, because the constituents in groundwater that are at issue with the mine closure are the constituents that are covered by the variance.

2.3.2 Recommended Alternative for Addressing the IND and PRO Uses

Staff recommends Alternative 3. A variance would provide regulatory relief for Meridian and would reflect the fact that the full range of IND and PRO uses of groundwater cannot be attained within the area delineated in Figure 5. Under the recommended alternative, the Board would continue to protect the IND and PRO uses of groundwater that only require low-quality water, and the intermediate goals of the *RMKM Remand Order* would be met, allowing Meridian to focus their resources on other aspects of Site closure.

3 IMPLEMENTATION PLAN FOR THE SITE

Ordinarily, implementation provisions describe the actions the Board will take to implement more stringent water quality standards after those standards are integrated into the Basin Plan. However, in this Proposed Basin Plan Amendment, the Board proposes to de-designate beneficial uses of groundwater in areas where naturally occurring constituents render the groundwater unfit for these uses and beneath and immediately downgradient of the WMUs that have not been closed.

The implementation plan associated with the Proposed Basin Plan Amendment therefore describes the Board's strategy for preserving the quality of groundwater in areas where the beneficial uses will not be de-designated.

3.1 Regulations that Apply to Establishing Implementation Programs

Per Water Code section 13050(j)(3), a basin plan amendment must include an implementation program to achieve water quality objectives. Water Code section 13242 prescribes the contents of an implementation plan, which include the following:

- description of the actions necessary to achieve the water quality objectives;
- time schedule; and
- a monitoring and surveillance program.

3.2 Actions Necessary to Achieve Water Quality Objectives

The Central Valley Water Board proposes to de-designate the MUN and AGR beneficial uses of groundwater in areas of the RMKM Site. In these groundwater areas, the Board will not seek compliance with water quality objectives associated with these uses, including the Primary and Secondary Maximum Contaminant Levels promulgated in Title 22 of the California Code of Regulations.

In areas unaffected by the Proposed Basin Plan Amendment, the Board will still be required to maintain the protection of the existing designated beneficial uses. The proposed water management strategy for protecting existing designated beneficial uses and limiting water quality impacts associated with the Site will not require active management of all groundwater. Implementation of the groundwater management strategy will be based on the following elements:

- Maintaining the lowest practicable water surface elevation in Skyrocket Pit Lake with the only surface water discharge point being governed by NPDES permit. This will be accomplished by maximizing the amount of surface water discharges from Skyrocket Pit Lake as authorized by the NPDES permit or other agreed-to methods.
- Pumping surfacing groundwater from seepage collection sumps at the FTR LCRS and the toes of the Gold Knoll ODS and West ODS to Skyrocket Pit Lake.
- Preventing statistically significant degradation of water quality in groundwater immediately surrounding the area delineated in Figure 5 through a monitoring program based upon baseline groundwater quality conditions.

This overall strategy will be incorporated into two permits: a set of closure WDRs for the WMUs that will conditionally classify the material in the WMUs as "Group C Mining Waste,"

thereby obviating the need for engineered liners or covers, and a permit (either NPDES permit or WDRs as appropriate) regulating the discharge of surface water from Skyrocket Pit Lake.

Closure WDRs for the Site: Groundwater monitoring has not shown poor-quality groundwater to be migrating in the subsurface to areas not addressed in this Proposed Amendment. (SES, 2011; SLR, 2013c.) Poor-quality groundwater, whether naturally occurring or degraded due to contact with waste rock materials in the FTR, the FTR ODS and portions of the West ODS, will continue to flow towards Skyrocket Pit Lake as long as Meridian maintains water levels within Skyrocket Pit in conformity with the Basin Plan. Meridian will also be required to continue collecting similar poor-quality groundwater at the FTR LCRS and from seeps at the toes of the Gold Knoll ODS and West ODS. Meridian will also continue to transfer the seepage collected in sumps to Skyrocket Pit Lake for temporary storage before it is discharged to Littlejohns Creek under conditions specified in Meridian's NPDES permit. The closure WDRs issued to regulate the WMUs will implement Title 27 of the California Code of Regulations. As mentioned above, Title 27 classifies mining waste based on the threat posed by soluble concentrations of waste constituents that may threaten waters of the state (including groundwater). After the AGR and MUN beneficial uses have been de-designated in areas of the Site, the WMUs will no longer threaten to cause impacts above applicable water quality objectives for groundwater in those areas.

NPDES Permit to Regulate Discharges from Skyrocket Pit Lake: Meridian will manage the water surface elevation in Skyrocket Pit Lake. Skyrocket Pit Lake will operate as a water storage facility until NPDES permit conditions allow Meridian to discharge lake water to Littlejohns Creek. Current groundwater conditions shall be maintained by keeping a sufficiently low level of water in Skyrocket Pit Lake to prevent overtopping of Skyrocket Pit Lake dam and to meet the other criteria, above.

3.3 Monitoring and Surveillance

The Central Valley Water Board currently regulates the RMKM Site with Title 27 WDRs and an NPDES permit that require periodic groundwater and surface water sampling, data analysis, and reporting to the Central Valley Water Board. The WDRs will be updated following the adoption of the Proposed Amendment, and the amended WDRs will continue to have groundwater sampling and reporting requirements. The monitoring results from the Title 27 WDRs and the NPDES permit will be used to ensure protection of beneficial uses in areas where those uses will continue to exist. Groundwater quality would be evaluated by comparing ongoing monitoring results to baseline groundwater conditions established using 2008-2013 monitoring data. This evaluation would be done by using a two-year, rolling-trend analysis with the evaluation starting with 2011 through 2013. If the groundwater analysis shows an increasing trend in concentrations of the dissolved analytes subject to the variance (see Section 2.3.1.3), further evaluation and action would be required. Groundwater monitoring requirements will be reduced and phased-out over a set period after consistent compliance is observed.

4 PROPOSED BASIN PLAN AMENDMENT LANGUAGE

The proposed changes to the Basin Plan shown below are based on implementing the recommended alternatives discussed in Section 3 of this report. Text additions to the existing Basin Plan language are underlined and italicized.

1. Amend the Basin Plan under the heading "Ground Waters" (page II-2.01), as follows:

Beneficial uses of groundwater of the basins are presented below. For the purposes of assigning beneficial uses, the term groundwater is defined in Chapter I.

Unless otherwise designated by the Regional Water Board, all ground waters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

Beneficial Use De-designations

Ground waters at the Royal Mountain King Mine Site are de-designated for MUN and AGR in the de-designation area shown in Figure II-2.

2. Amend the Basin Plan under the heading, "The Nature of Control Actions Implemented by the Regional Water Board" and subheading, "Control Action Considerations of the Regional Water Board" (page IV-21.00):

12. Policy for the Royal Mountain King Mine Site in Calaveras County

a. *Groundwater Management Strategy at the Royal Mountain King Mine Site in Calaveras County*

   The owner of the Royal Mountain King Mine Site shall continue to implement a groundwater management strategy to manage poor-quality groundwater at the Site and to protect good-quality groundwater. The strategy is to maintain the lowest practicable level of water in Skyrocket Pit Lake and prevent any measurably significant degradation of current water quality in groundwater downgradient of the MUN and AGR de-designation area shown in Figure II-2. In addition, saline leachate that emerges as springs at the base of the Gold Knoll Overburden Disposal Site and the West Overburden Disposal Site, as well as the Flotation Tailings Reservoir leachate collection and recovery system, shall be collected in sumps and transferred by pumping to Skyrocket Pit Lake or regulated with an NPDES permit or WDRs.

b. *Variance for IND and PRO Uses in Groundwaters at the Royal Mountain King Mine Site, in Calaveras County*

   Groundwaters within the area shown in Figure II-2 at the Royal Mountain King Mine Site are subject to a variance for the IND and PRO uses based on high background levels of total dissolved solids. The variance exempts the constituents listed in the table, below, from regulatory limits that would otherwise be determined from the IND and PRO beneficial uses.

Constituents in groundwater subject to the variance for IND and PRO include:

Total Dissolved Solids
Arsenic
Chloride
Nitrate
Selenium
Sulfate

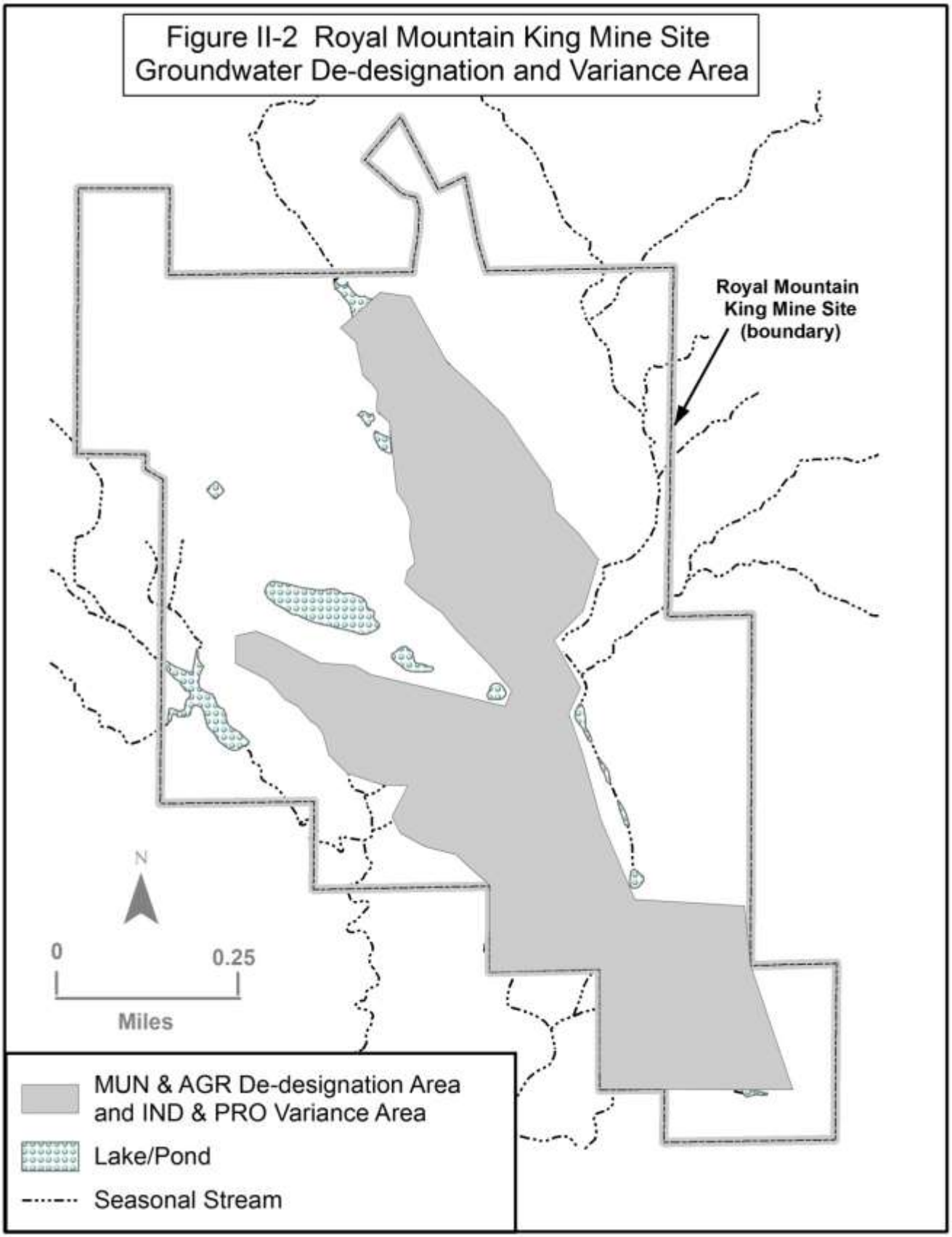
Figure II-2 Royal Mountain King Mine Site
Groundwater De-designation and Variance Area
Royal Mountain
King Mine Site
(boundary)
N
0
0.25
Miles
MUN & AGR De-designation Area
and IND & PRO Variance Area
Lake/Pond
Seasonal Stream

5 CONSISTENCY WITH OTHER LAWS, PLANS, POLICIES, AND REGULATIONS

Federal regulations do not apply to groundwater beneficial uses and, therefore, they are not discussed in this report. However, any proposed changes to Basin Plans must be consistent with existing State laws, plans and regulations and, where appropriate, with State and Central Valley Water Board policies, including those contained in water quality control plans. Relevant state and regional policies are described below.

5.1 CONSISTENCY WITH STATE WATER BOARD POLICIES

The State Water Board is authorized to adopt statewide policies for water quality control. (Wat. Code, § 13140.) When the Central Valley Water Board proposes amendments to the Basin Plan, those amendments must conform to any state policy for water quality control (Wat. Code, § 13240.) The following are the State Water Board policies that affect or potentially affect this Proposed Basin Plan Amendment:

- State Water Board Resolution 68-16, Statement of Policy with Respect to Maintaining High Quality of Water in California (*Antidegradation Policy*)
- State Water Board Resolution 88-63 (*Sources of Drinking Water Policy*)
- State Water Board Resolution 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304, and
- State Water Board Resolution 96-79, the Containment Zone Policy Amendment to Resolution 92-49 (collectively, *Resolution 92-49*).

The relationship between these policies and the Proposed Basin Plan Amendment are described in the following sections.

5.1.1 Antidegradation Policy

The *Antidegradation Policy*, adopted by the State Water Board in October 1968, limits the Board's discretion to authorize the degradation of high-quality waters. This policy has been incorporated into the Board's Basin Plans. High-quality waters are those waters where water quality is more than sufficient to support beneficial uses designated in the Board's Basin Plans. Whether or not a water is a high-quality water is established on a constituent-by-constituent basis, which means that an aquifer can be considered a high-quality water with respect to one constituent, but not for others. (State Water Board Order WQ 91-10.)

The *Antidegradation Policy* includes the following statements:

> 1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water, and will not result in water quality less than that prescribed in the policies.
>
> 2. Any activity which produces or may produce a waste or increase volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Though the Proposed Amendment itself will not directly authorize or cause any degradation, implementation of the Proposed Amendment, via the re-issuance of WDRs, could authorize limited degradation in areas underneath and immediately downgradient of the unclosed WMUs due to the fact that the WMUS have not been constructed to completely contain the leachate, as described in Section 1.2.3. This discussion elaborates on how any anticipated degradation that could occur as a result of the implementation of the Proposed Amendment would nonetheless be consistent with the *Antidegradation Policy*. (It is important to note that the Board can only authorize degradation through the issuance of revised WDRs or through other permits or waivers; those actions would need to be accompanied by their own antidegradation findings, which would contain a more substantive discussion regarding the technologies that will be implemented to achieve compliance with existing laws and policies.)

The *Antidegradation Policy* is applicable because while the Proposed Amendment will remove beneficial use protections primarily in areas where groundwater cannot be utilized for the beneficial uses currently designated in the Basin Plan (i.e., those areas that meet the *Sources of Drinking Water Policy's* exemption criteria of 3,000 mg/L), some groundwater that may be of sufficient quality to support the currently-designated beneficial uses will also be de-designated under the Proposed Amendment – these are the areas that lie underneath and immediately downgradient of the unclosed WMUs.

Though the evidence in the Board's files indicates that groundwater in these areas is of generally poor quality, pockets of groundwater within these areas may nonetheless qualify as high-quality waters under the definition articulated in the *Antidegradation Policy*. The removal of beneficial use protections in these areas would authorize the Board to issue WDRs that would allow degradation that might not otherwise be permissible under the currently-applicable provisions of the Basin Plan.

However, there is strong evidence that the Board would nonetheless be able to demonstrate that best practicable treatment or control methodologies are being employed to minimize degradation, that limited degradation in the areas underneath and immediately downgradient of the unclosed WMUs would be consistent with the maximum benefit to the people of the state, that degradation will not unreasonably affect present and anticipated future beneficial uses, and that degradation will not result in water quality less than that prescribed in applicable state and regional policies.

First, the *RMKM Remand Order* contains an extensive discussion of the practicability of reconstructing the WMUs and the benefits that would be gained by eliminating and/or treating the leachate. These discussions strongly suggest that the Board, in a future permitting action, could conclude that the continued management of groundwater as proposed in the implementation provisions of the Proposed Amendment should be considered to be the "best practicable treatment or control" of the waste discharges, and that the regulatory approach embodied by the Proposed Amendment inheres to the maximum benefit of the people of the state. Regarding the practicability of reconstructing the WMUs, or even constructing a cap over the WMUs, the State Water Board found that this was not reasonable in view of background water quality conditions in the area. Second, Meridian has demonstrated that other treatment or control methodologies to treat the leachate discharges are impracticable or infeasible. This would allow the Board to conclude that the proposed groundwater management strategy represents the best practicable treatment or control of the wastes in the discharge. It is also reasonable to conclude that a groundwater management strategy that

focuses efforts on preventing groundwater impacts from spreading inheres to the maximum benefit of the people of the state, given the fact that Meridian will still be required to protect groundwaters and surface waters that are not de-designated, and given the limited areal extent of the de-designated potentially “high-quality” groundwater.

With respect to the remaining prongs of an *Antidegradation Policy* analysis, ensuring that degradation will not unreasonably affect present and anticipated future beneficial uses and that the degradation will not result in water quality less than that prescribed in state and regional policies, the Proposed Amendment is consistent with the *Antidegradation Policy*. As stated elsewhere in this Staff Report, no present uses of groundwater for MUN or AGR purposes will be affected by the implementation of the Proposed Amendment, and it is reasonable to conclude that groundwater underneath and immediately downgradient of the WMUs will not be used for MUN and AGR purposes in the future, due to the fact that the WMUs have not been constructed to Title 27 standards. Implementation of the Proposed Amendment will therefore not unreasonably affect present and anticipated future beneficial uses. Lastly, consistency with state and regional policies is further described in this section of the Staff Report, which concludes that the implementation of the Proposed Amendment will not result in water quality less than that prescribed in state and regional policies.

While the Board must still demonstrate that waste discharges (including discharges from the WMUs) authorized under WDRs issued subsequent to the adoption of the Proposed Amendment will comply with the applicable provisions of the *Antidegradation Policy*, the Board’s preliminary analysis concludes that the Proposed Amendment and its implementation provisions are fully consistent with the *Antidegradation Policy*.

5.1.2 Sources of Drinking Water Policy

The *Sources of Drinking Water Policy* states that all waters of the state are to be protected as existing or potential sources of municipal and domestic supply water. If amended as proposed, the Basin Plan will de-designate the MUN beneficial use for high TDS groundwater in the area of, and beneath, the five waste management units at the Site that have not been closed. Groundwater in this area typically exceeds 3,000 mg/L and will not likely be used for MUN.

However, for groundwater that does not meet the 3,000 mg/L criterion, the Proposed Amendment is inconsistent with the *Sources of Drinking Water Policy.* This Staff Report proposes that the Central Valley Water Board include a request that the State Water Board adopt a site-specific modification to the *Sources of Drinking Water Policy* in order to resolve this inconsistency. This Staff Report provides the rationale for this site-specific modification.

5.1.3 Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304

This Policy contains procedures for the Central Valley Water Board to follow for oversight of cleanup projects to ensure cleanup and abatement activities protect the high quality of surface water and groundwater. The Proposed Basin Plan Amendment does not include any requirement for cleanup and abatement activities; therefore, this Policy is not applicable to the Proposed Basin Plan Amendment.

5.2 Consistency with Central Valley Water Board Policies

The following are the Central Valley Water Board policies that affect or potentially affect this Proposed Basin Plan Amendment:

- The Controllable Factors Policy
- The Antidegradation Implementation Policy
- The Policy for Application of Water Quality Objectives
- The Watershed Policy

These policies and their relevance to the Proposed Basin Plan Amendment are described in the following sections.

5.2.1 Controllable Factors Policy

On page IV-15.00 of the Basin Plan, the Central Valley Water Board's *Controllable Factors Policy* states:

> Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to the authority of the State Water Board or Central Valley Water Board, and that may be reasonably controlled.

The Proposed Basin Plan Amendment will modify the Basin Plan to allow the owners of the RMKM Site to effectuate a groundwater management strategy that reasonably controls controllable water quality factors. Therefore, this effort is consistent with the *Controllable Factors Policy*.

5.2.2 Antidegradation Implementation Policy

The Basin Plan states that, "The antidegradation directives of Section 13000 of the Water Code and State Water Board Resolution 68-16 …require that high quality waters of the State shall be maintained 'consistent with the maximum benefit to the people of the State.' The Regional Water Board applies these directives when issuing a permit, or in an equivalent process, regarding any discharge of waste which may affect the quality of surface or ground waters in the region." The Proposed Basin Plan Amendment is consistent with the Antidegradation Implementation Policy for the same reasons described in Section 5.1's discussion of the Proposed Amendment's consistency with the State Water Board's *Antidegradation Policy*.

5.2.3 Policy for Application of Water Quality Objectives

Excerpts from the *Policy for Application of Water Quality Objectives* are presented below. The full text can be found on page IV-16.00 of the Basin Plan.

> Water quality objectives are defined as 'the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water, or the prevention of nuisance within a specific area.'… Water quality objectives may be stated in either numerical or narrative form. Water quality objectives apply to all waters within a surface or ground water resource for which beneficial uses have been designated…

> The numerical and narrative water quality objectives define the least stringent standards that the Regional Water Boards will apply to regional waters in order to protect beneficial uses.

Though the Proposed Basin Plan Amendment will alter beneficial use designations, it will not adversely affect the actual uses of groundwater at the Site or adjacent properties. Therefore, the Proposed Basin Plan Amendment is consistent with the *Policy for Application of Water Quality Objectives*.

5.2.4 Watershed Policy

The Central Valley Water Board's *Watershed Policy* (in the Basin Plan) indicates that the Central Valley Water Board supports a watershed-based approach to addressing water quality problems. The State and Central Valley Water Boards are developing a proposal for integrating a watershed approach into other programs to gain stakeholder participation and to focus efforts on the most important problems and the sources contributing to those problems.

Central Valley Water Board staff has conducted outreach to the stakeholders in the area encompassed by the Proposed Basin Plan Amendment. Staff held a public meeting in Stockton to present the proposed project and to address potential CEQA scoping issues on 23 June 2011. Staff held a second public meeting in Copperopolis on 20 August 2011, to receive comments and information from additional local County agencies and other stakeholders. Approximately two dozen people (mostly residents in the Diamond XX subdivision) attended the second meeting. The public will have an opportunity to provide written comments regarding the Proposed Basin Plan Amendment during a 45-day comment period. The Proposed Amendment will be considered by the Central Valley Water Board during a public hearing at which interested persons are invited to comment. For these reasons, the Proposed Basin Plan Amendment is consistent with the *Watershed Policy*.

6 ENVIRONMENTAL ANALYSIS

The Proposed Basin Plan Amendment recognizes that the MUN and AGR beneficial uses for groundwater in some areas at the Site do not currently exist and cannot feasibly be attained. The Proposed Basin Plan Amendment will not result in any significant changes to existing or future environmental conditions. These conclusions are reflected in the CEQA evaluation checklist (Attachment A).

6.1 ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT

The potential environmental impacts associated with the Proposed Basin Plan Amendment are discussed in the CEQA Checklist. The CEQA evaluation determined that the Proposed Basin Plan Amendment, and the reasonably foreseeable means of compliance with the Proposed Amendment, will not result in any significant environmental impacts. Therefore, no mitigation measures are necessary or proposed.

6.2 REASONABLY FORESEEABLE METHODS OF COMPLIANCE

At the time it adopts a rule or regulation requiring the installation of pollution control equipment or implementation of a performance standard or treatment requirement, the Central Valley Water Board is required to perform an environmental analysis of the reasonable foreseeable methods of compliance. (Pub. Resources Code, § 21159.) Although an environmental analysis is still required under CEQA, the Proposed Basin Plan Amendment will not require the installation or construction of pollution control equipment and will not alter performance standards or treatment requirements and will not result in significant and reasonably foreseeable environmental impacts.

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FIGURES

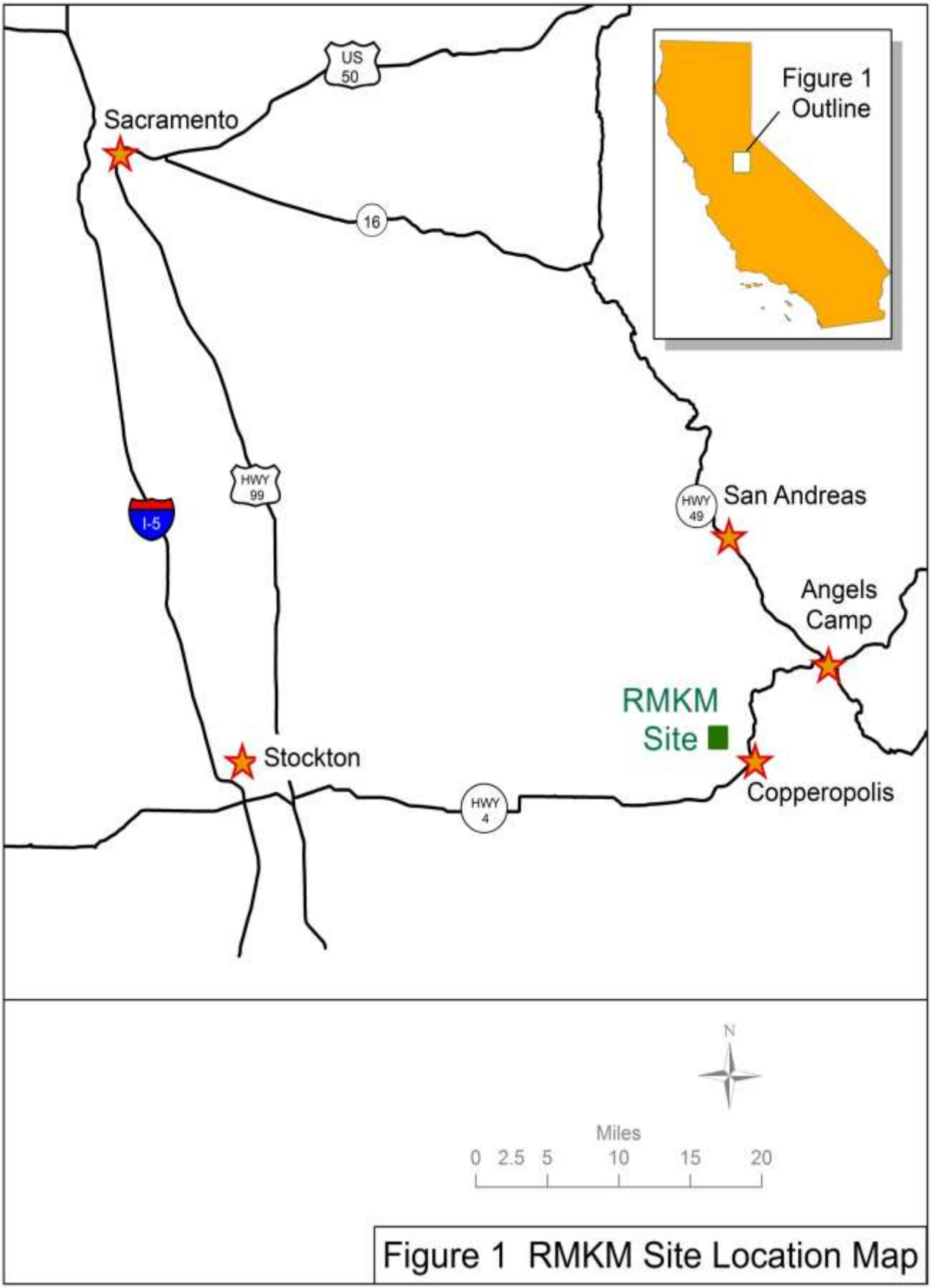


Figure 1 RMKM Site Location Map

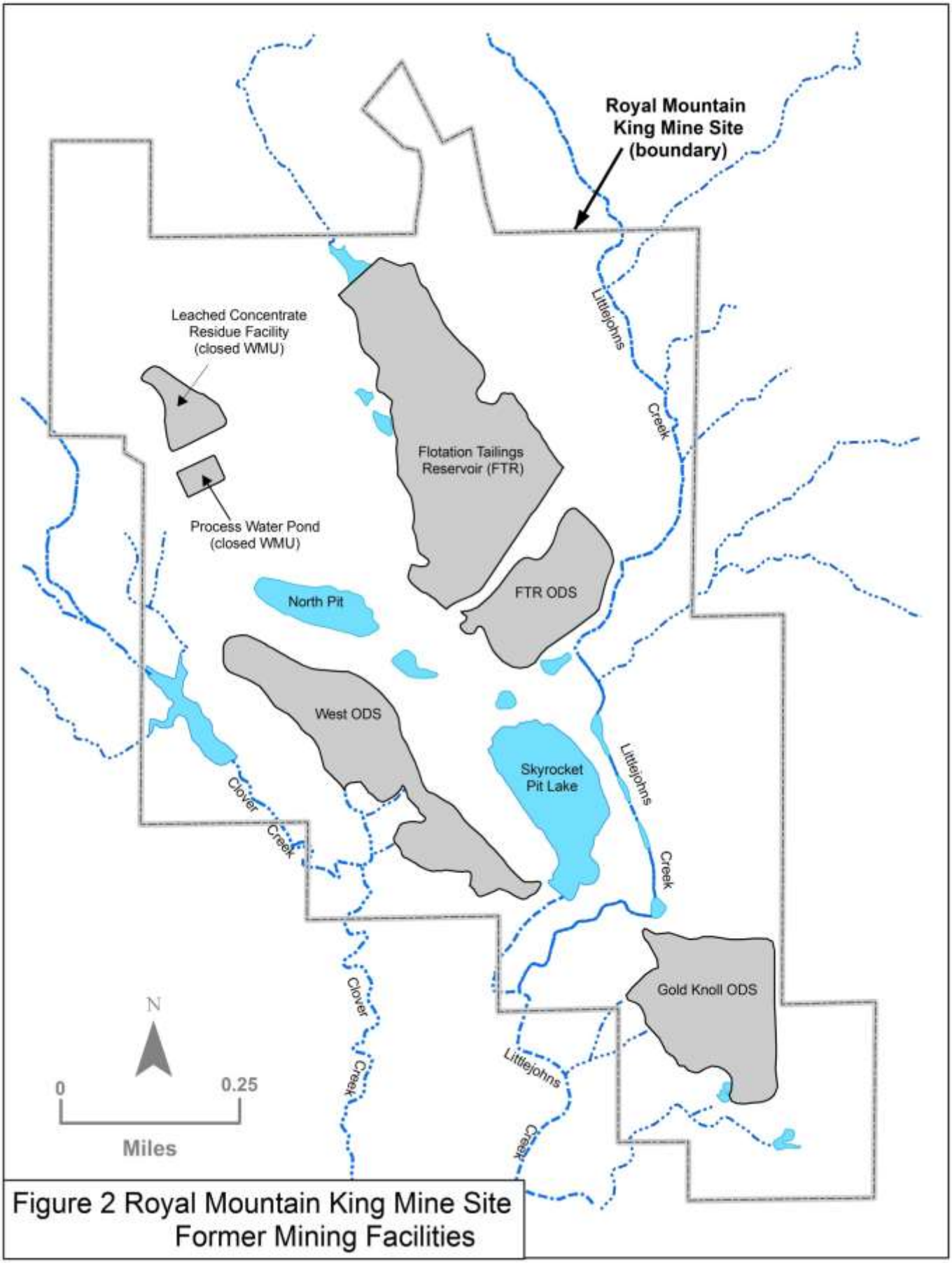
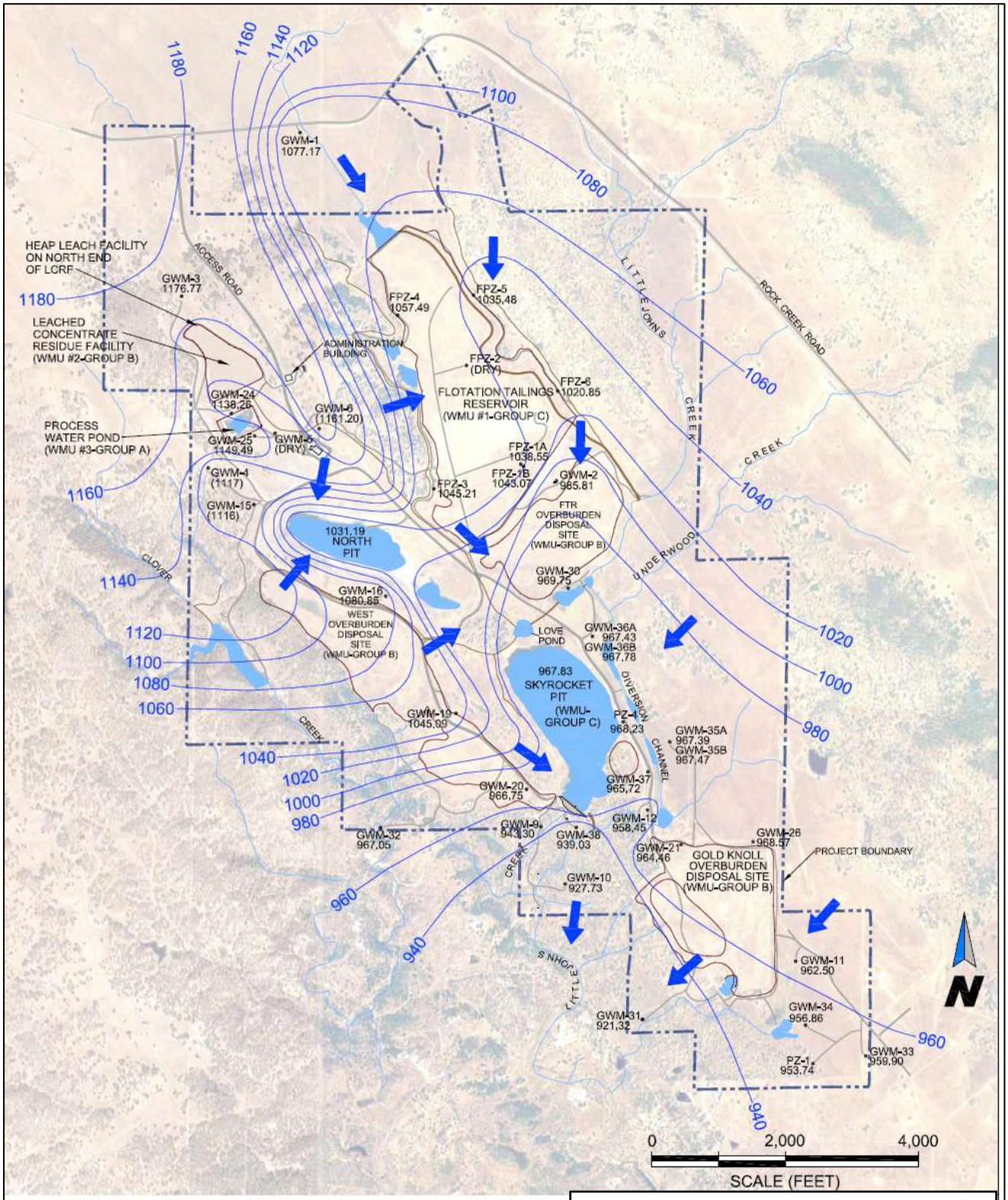


Figure 2 Royal Mountain King Mine Site Former Mining Facilities



LEGEND

GWM-1 • GROUNDWATER MONITORING POINT

1080.9 GROUNDWATER ELEVATION IN FEET

CONTOURS OF EQUIPOTENTIAL

NOTE: VALUES IN PARENTHESES INFERRED FROM OTHER MONITORING DATA AT SAME LOCATION.

Figure 3 RMKM Site Features and Groundwater Flow Directions (April 2013)

October 2013

SLR Consulting USA Pty Ltd

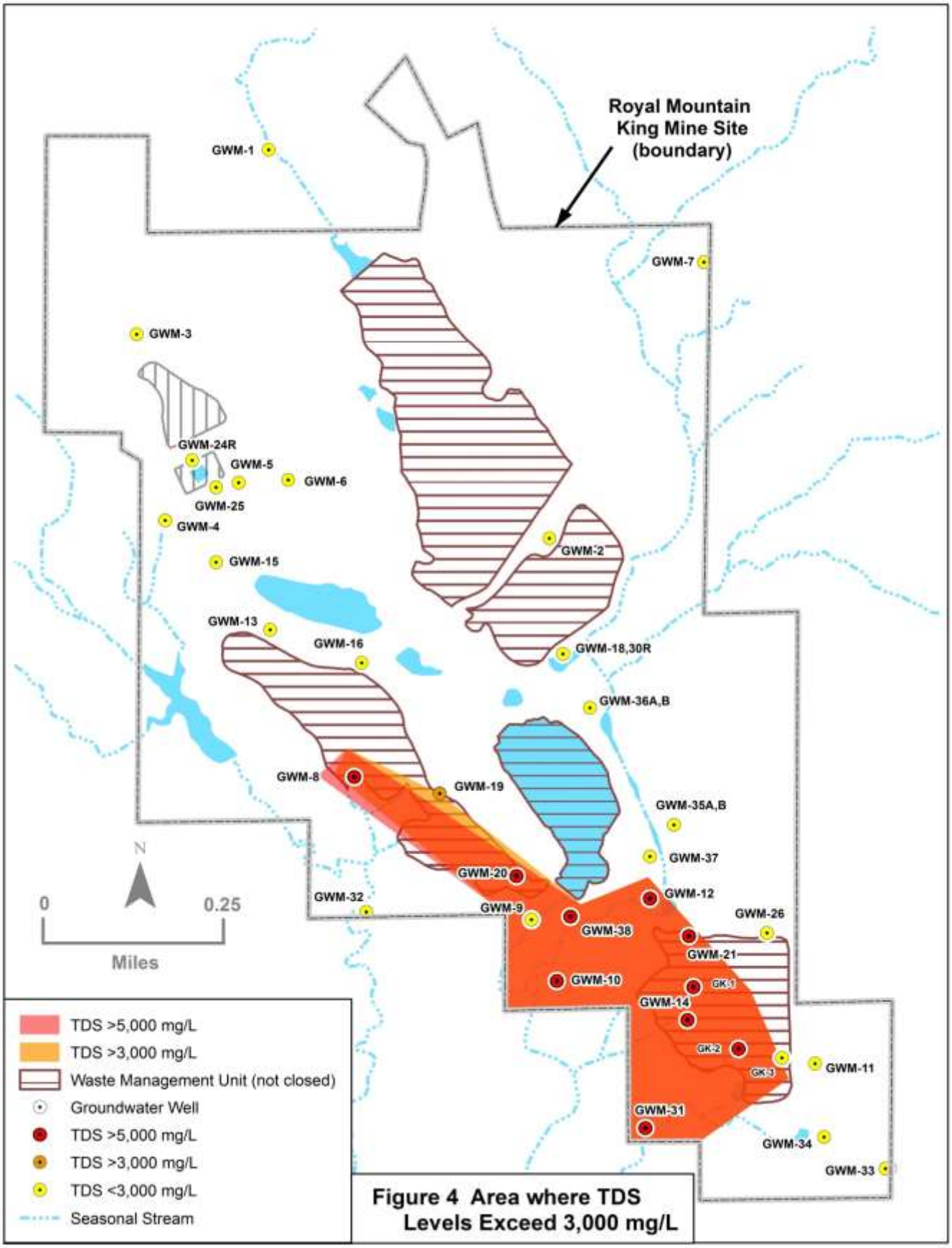


Figure 4 Area where TDS Levels Exceed 3,000 mg/L

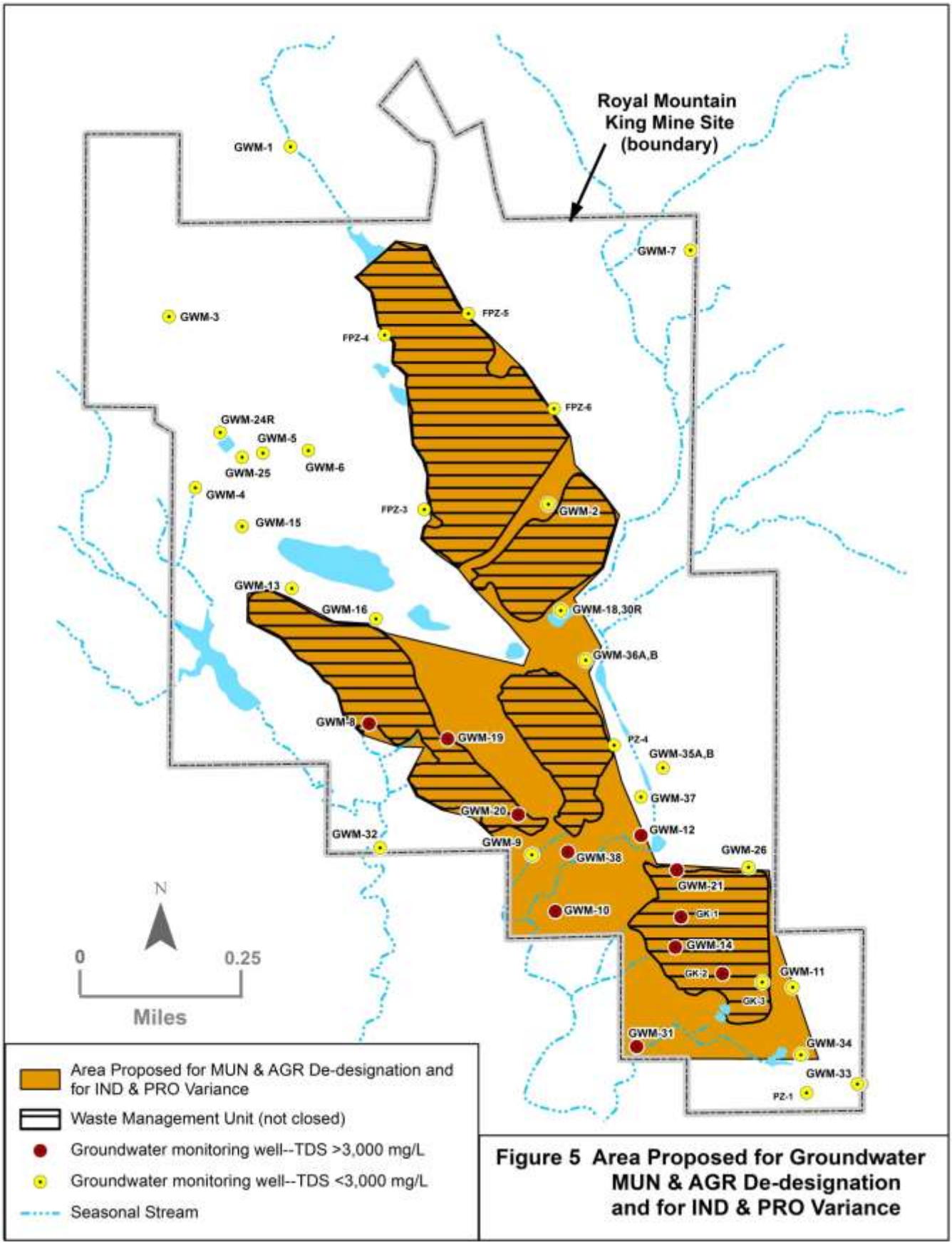


Figure 5 Area Proposed for Groundwater MUN & AGR De-designation and for IND & PRO Variance

ATTACHMENT A

Geological and Hydrological Setting of the RMKM Site

Geological Setting of the RMKM Site

The RMKM Site is located in the westernmost of three relatively narrow, elongate metamorphic belts that extend northwestward and southeastward for hundreds of kilometers along the base of the western foothills of the Sierra Nevada geomorphic province. The western metamorphic belt is bounded along its eastern side by the Bear Mountains Fault Zone and along its western side (west of Gopher Ridge) by younger, non-metamorphosed sediments of the Great Valley geomorphic province and structural trough. (Clark, 1964.)

According to Clark (1970), "[T]he western metamorphic belt consists of a sequence of Jurassic formations, including the Gopher Ridge Volcanics, Salt Spring Slate, Copper Hill Volcanics, Mariposa Formation and unnamed units. This subdivision separates thick volcanic units from thick sedimentary units but fails to portray adequately the complexity of the stratigraphic section (see Clark, 1964, pl.9). The lenticular form of the mapped units is suggested by…tongues or lenses of volcanic rocks in the Salt Spring Slate, but outcrops do not permit consistent delineation of the smaller lithologic units…These properties of the Jurassic rocks, as well as lateral facies changes and repetition of similar lithologies in different parts of the geologic section, preclude accurate correlation between structural blocks that are separated by faults or major fault zones." The Bear Mountains Fault Zone is one part of a great reverse fault system that extends the length of the western foothills belt. Salt Spring Valley and the RMKM Site are located southwest of the Bear Mountains Fault Zone. Clark (1970) described the Bear Mountains Fault Zone as "[E]ach fault zone embraces a wide belt of individually mappable shear zones, faults, and less readily defined belts of schist."

The well-defined northwestward trend of large-scale to small-scale geological features in Salt Spring Valley is evident at the RMKM Site as northwest-trending, prominent ridges and valleys, faults and shear zones, rock units and outcrops, and slaty cleavage and foliation. (Taliaferro and Solari, 1949.) The Copper Hill Volcanics (Jurassic age meta-volcanic rocks consisting largely of greenstone), stratigraphically overlies the Salt Spring Slate (Jurassic age meta-sedimentary rocks consisting of carbonaceous shale/slate), mainly east of the Littlejohns Fault. Groundwater flows through relatively open fractures in the Copper Hill Volcanics, which are characterized by hydraulic conductivities ranging from 5×10^{-5} to 5×10^{-3} cm/sec. The Salt Spring Slate formation (consisting largely of phyllite, as described above) is characterized by relatively closed fractures and lower hydraulic conductivities ranging from 2×10^{-7} to 4×10^{-4} cm/sec, and occurs mainly west of the Hodson Fault. (GeoSyntec, 2003.) Clark (1970), extensively mapped and described the stratigraphy and structure of the foothills metamorphic belt, and noted some of the complexities in the three-dimensional structures that may occur between the "much faulted and sheared" Copper Hill Volcanics and the Salt Spring Slate. Phyllite is a fine-grained, compact, foliated rock that typically has low inherent porosity, permeability and, low transmissivity. Greenstone comprises a variety of rock types that can have relatively low inherent porosity, permeability, and transmissivity in more massive rock formations and relatively high inherent porosity, permeability, and transmissivity due to internal rock structures such as brecciated surfaces between lava flows.

The Site straddles the northwestward-trending Hodson/Littlejohns Fault Zone ("HLFZ") – the westernmost fault zone included in the broad Bear Mountain Fault Zone. The HLFZ consists of structurally interleaved, lenticular bodies of greenstone and phyllite. The Hodson Fault Zone separates the Salt Spring Slate, to the west, from intermixed phyllite and greenstone units within the HLFZ, to the east. The Littlejohns Fault Zone separates the intermixed units within the HLFZ, to the west, from the more massive greenstones of the Copper Hill Volcanics, to the east.

Rocks within the HLFZ have been hydrothermally altered, resulting in deposition of pyrite, arsenopyrite, and other minerals finely distributed throughout, and in veins and fractures within, the host rocks. The

gold that was mined from the three pits was associated with the hydrothermal alteration within the HLFZ.

The HLFZ crosses the center of the Site, from the southern property boundary, where it is relatively well-defined, through the central portion of the site where it becomes less well-defined, and extending northwards, becoming only approximately located, or inferred. Detailed mapping of geological features at the Site shows that most of the known gold-related mineralization and host rock alteration occur within the HLFZ. (Lechner and Kuhl, 1990; Kuhl and Lechner, 1990.) The HFLZ has been mapped as narrowing toward the southern end of the Site and widening towards the north, but the locations of the faults are much less certain.

Stratigraphically, the Copper Hill Volcanics overlie and intertongue with the Salt Spring Slate. Bodies of volcanic rocks are tentatively mapped as lenses within the Salt Spring Slate, but possibly these lenses are cross sections of tongues extending in the dip direction from the Copper Hill Volcanics. The dip direction is consistently reported as towards the northeast, but the dip angle is variable, from approximately vertical to 60º or less, and not well constrained at the Site. Regionally, the dip of the Bear Mountain Fault Zone is nearly vertical to about 75º eastward.

Lechner and Kuhl (1990) stated, “Low angle thrusting (D3) is definitely the most important structural event in the Hodson mining District…Imbrication and ramping [thrusting of rock units towards the west] are common within the Hodson fault zone”. Based upon their mapping of the Site during mining, the authors indicated that the Littlejohns Fault dips to the east at 40º to 70º, an angle that closely parallels the angle of foliation and lithological contacts that dip 60º-80º NE. “Mapping and drill data indicate the Littlejohns Fault truncates post mineral cross faults in the Gold Knoll and Skyrocket pits and the Mountain King Fault in the North pit area.” (Kuhl and Lechner, 1990.) The Mountain King Fault Zone, consists of at least five imbricate, low-angle, northward-dipping thrust faults that trend more westerly than, and truncate, the Hodson Fault Zone. The Mountain King Fault Zone has dismembered and offset the Hodson Fault near the northern end of the North Pit, but is itself truncated by the Littlejohns Fault.

Groundwater

Groundwater flows naturally by the force of gravity from areas of higher potential head or elevation to areas of lower potential head. However, in fractured bedrock aquifers, such as at the RMKM Site, flow of groundwater is restricted to fractures and cracks within the rock. Some rocks have little fracturing and some have more, and it is not uncommon for fracture zones to be discontinuous and disconnected. Therefore, while a difference in hydraulic head or elevation indicates the potential for groundwater flow, the actual occurrence of flow is dependent on the presence of interconnected fractures in the bedrock. At the RMKM Site, this means that groundwater generally flows from areas of high elevation (like the FTR and North Pit) to areas of low elevation (such as Littlejohns Creek and Skyrocket Pit), but the flow paths may not be direct, are highly variable, and the flow rates are generally small because of the limited interconnection of fractures. Groundwater elevations determined at monitoring wells spread across the Site are used to derive groundwater surface contours. Although groundwater flows downgradient more or less perpendicularly to the contours, if there are interconnected cross-cutting fractures groundwater can flow, locally, in other directions. At the RMKM Site, groundwater generally tends to flow westerly in the area east of the Littlejohns Fault, and easterly to southerly in the area west of the Littlejohns Fault. The central area of the Site (in the vicinity of the Hodson and Littlejohns fault zones) and the western area of the Site include several natural ridges, valleys as well as major remnant mining features (the pits and ODSs). These features affect groundwater flow directions by creating more variability. Thus, depending on the location, groundwater may flow eastward, southward or westward.

The groundwater that emerges as springs near the bases of the West and Gold Knoll ODSs is collected in sumps and then transferred to Skyrocket Pit Lake by pumping. Leachate collected from a sump

associated with the FTR LCRS is also transferred to Skyrocket Pit Lake. The water level in Skyrocket Pit Lake is now at a higher elevation than downstream portions of Littlejohns Creek bed, so there is potential for groundwater to flow from the lake to the creek. However, comparisons of water quality indicate that pit lake water is not a significant source of water to the creek; nor is the pit acting as a sink for groundwater below its current water elevation as it did while being pumped dry during mining operations.

In general, the direction of groundwater flow tends to follow the topographical slope of the overlying land surface, from higher elevations to lower elevations. An indistinct watershed boundary located approximately one mile north of the Site separates an area of surface water and groundwater that flows northwestward into the main part of the Salt Spring Valley and the Rock Creek watershed, from an area of surface water and groundwater that generally flows southwestward across and through the Site and into the Clover Creek and Littlejohns Creek watersheds.

More than 40 wells and piezometers have been installed at the Site to monitor groundwater conditions before, during, and after the mining pits were excavated. Groundwater generally occurs within twenty feet of ground surface at most monitoring wells. Groundwater surface elevation contours have been constructed from groundwater elevations and approximate flow lines interpolated by consultants for MBC, based on groundwater elevations determined at each well that was monitored. Groundwater flow lines can be estimated from, and are typically perpendicular to, groundwater elevation contours. (Driscoll, 1986.) Groundwater contour maps are presented in the periodic monitoring reports required by the Central Valley Water Board and specified in the Waste Discharge Requirements (WDRs) No. R5-2008-0021 and the revised Monitoring and Reporting Program (MRP). Site-wide, the groundwater surface resembles the shape of the overlying land surface topography.

The flow lines derived from the groundwater contour maps suggest a complex pattern of flow paths that partially reflect the overlying, irregular surface topography and the underlying labyrinthine hydrogeology at the Site. Meridian's mining activities significantly altered surface topography since the three large open pits were excavated and the three large ODSs and broad FTR were constructed. Consequently, groundwater elevation contours and flow directions have changed at the Site as a result of the mining activities. The changes in flow and (in part) recharge have also caused changes in the locations of poor quality groundwater.

There is a long recorded history of groundwater and surface water quality at the Site that indicates that groundwater quality was historically poor, with elevated TDS levels, at portions of the Site (TRC, 1997; TRC, 1999; RWQCB, 1998; GeoSyntec, 2003; SES, 2006; and SES, 2007). As described in the SWRCB Technical Report (SWRCB/OCC File No. A-1569), "a large portion of groundwater at the site and in the vicinity of the site does not meet water quality objectives, including groundwater that discharges through the ODSs, mostly from natural conditions but also from mining operations." The presence of naturally occurring salts contributes to the variability and often poor quality of the groundwater in the area and "water quality objectives could not be obtained beneath a large portion of the site even if all contributions from the Discharger were removed."

Temporal variability of groundwater quality has been documented at several local resident wells, springs, and at some groundwater monitoring wells. As summarized in the SWRCB Technical Report, "in areas of good quality groundwater upgradient of the site…where there is a thin, shallow layer of groundwater of good quality, [and] under pumping conditions groundwater quality sometimes deteriorates as deeper mineralized water is captured. The better quality ground water may be formed by direct infiltration of precipitation during the wet season, which floats on a deeper, denser (e.g., more saline) layer of poor water quality. In some areas, the poor quality water occurs under artesian (pressure) conditions, and if tapped, for example by a spring, well, or excavation, it will emerge at the

surface ….There are [also] seasonal fluctuations of several tousands *[sic]* mg/L TDS in groundwater in some areas, which indicates the effect of seasonal precipitation on water quality."

Although groundwater conditions have stabilized prior to the most recent decade, subtle changes are always occurring. Observed changes include the drying and moving of spring locations that are associated with the complex fractured geology and mineral interactions that can result in the opening and closing of fractures at a more local level.

One particular example relates to the water quality changes observed at groundwater monitoring wells GWM-02 and GWM-30 that have been attributed to the effects of changing hydrological and natural groundwater quality conditions in the vicinity of the FTR. This attribution is based on the following observations: (1) The recharge area for these wells has been greatly reduced due to the construction of a 150-acre lined facility over the former surface water drainage and valley in which the FTR is located and the related diversion of surface water flows around the FTR. This decreases the dilution effects of rainfall recharge and surface water flows on the naturally occurring, poor quality groundwater in the FTR valley, characterized by historic water quality of the FTR Spring Drain. (2) Dewatering of Skyrocket Pit Lake during mining greatly increased the flux of groundwater away from the FTR area. Evidence of this effect included the large seasonal changes in groundwater elevation at GWM-30 (which ranged up to 40 feet during mining). (3) Variability in annual rainfall, which acts to concentrate constituents during periods of drought due to decreased dilution effects, and decreased constituent concentrations during wet periods. (4) Ground disturbance during mining adjacent to the monitoring wells, which included the removal of native soil and the exposure of native bedrock which acts to change the chemistry of infiltrating rainfall. (SES, 2013.)

More generally, as described in the 2004 SWRCB Technical Report (SWRCB/OCC File No. A-1569; SWRCB, 2004b.), the northwest area of the Site represents a different hydrogeological regime from the southwest part of the site. In the northwest part of the site, groundwater fluctuates by more than 10 feet from season to season, while in the southeast part of the Site, the groundwater elevations remain very stable, only fluctuating from 1-to-5 feet from season to season. This suggests potentially different sources at least of shallow groundwater for these areas. Groundwater in the northwest area seems to be affected by direct precipitation while in the southeast area, groundwater levels are affected by a deeper, distant recharge source.

Higher-quality groundwater tends to flow westward and southwestward from the predominantly greenstone uplands of the Bear Mountains, east of the RMKM Site, towards the HLFZ and the western area of the Site. Within the western area of the Site, poorer-quality groundwater apparently flows in several directions (Figure 3), largely following ground surface topography. As groundwater moves through the Site, it likely changes direction back-and-forth between apparently large-scale geological structures that trend northwestward and southeastward, and apparently small-scale, more localized geologic features that trend northeastward and southwestward.

There are also many surface and subsurface remnant disturbances due to historical, pre-RMKM mining operations that can locally interact with and redirect groundwater chemistry and flow. This is especially true for the northwestern part of the Site, where historical underground gold mines tunneled to depths of several hundred feet. It is believed that some of these underground workings still exist, although are caved or backfilled. However, several were destroyed during excavation of the RMKM pits.

Additionally, several of the monitoring wells are screened nearly their entire depth across multiple zones, with some having several hundred feet of well screen, or having boreholes that were filled with sand or gravel to within 5 to 10 feet of the ground surface. Such well construction allows water from multiple water-bearing units, and potentially with different water quality compositions, to enter the well borehole and during well purging; this water enters the well casing and is sampled. Consequently, some monitoring well water quality data may reflect seasonal changes of water quality and may not be

related to mining activities. Poor water quality may be more magnified during dry years and conversely, minimized during wet years. (SWRCB/OCC File No. A-1569.)

The Skyrocket, North, and Gold Knoll Pits were dewatered as they were being excavated to allow mining equipment access to pit depths approaching 300 feet below the original ground surface. Water that was pumped from the pits during excavation was used onsite for mining-related applications that included ore beneficiation. Ore beneficiation involved using onsite groundwater and finely ground ore to create slurry as part of recovering gold. Other onsite uses of water pumped from the pits were to make up for water lost to evaporation or storage in settled tailings and for dust control. (SES, 2012a.)

The Gold Knoll Pit was backfilled with overburden during the mining of North and Skyrocket Pits. Overburden removed from the mine pits and placed into the ODSs contains natural sulfide and other hydrothermal minerals that are associated with the gold deposits. Exposed to air and water, oxidation of the sulfide minerals produces acids and soluble minerals (e.g., and sulfate ions) and metals (e.g., iron, arsenic and selenium ions). The host rock containing the sulfide minerals (i.e., the phyllite, serpentinite, and greenstone) has a very high neutralization capacity. This means that the acids produced by oxidation of sulfide minerals are neutralized as quickly as they are produced by the more alkaline groundwater. Under these conditions, dissolved metals (e.g., arsenic ions) are less mobile in the aquatic environment than sulfate, and dissolved metals tend to remain near their source (e.g., the ODSs). By way of comparison, the dissolved minerals, in particular sulfate, readily migrate with moving groundwater. As a result of these processes, relatively high TDS and sulfate concentrations are measured in surface and groundwater downgradient of the ODSs.

Water chemistry in the greenstone zone is characterized by relatively low TDS concentrations, with the dominant dissolved minerals being bicarbonate and magnesium. The Salt Spring Slate imparts salt to the local ground and surface water due to its marine origin, the presence of interstitial pyrite, the long residence time of groundwater moving through it, and the locally mineralized and altered rock in the fault zone. (GeoSyntec, 2003.) Thus, water quality in the phyllite zone is variable and generally of poor quality with TDS concentrations that can range from hundreds into the tens of thousands of mg/L near the HLFZ. Generally, offsite further to the southwest, limited data indicate that water quality in the phyllite is still variable but over a smaller range (hundreds to thousands of mg/L). The dominant dissolved minerals in the phyllite zone are sodium, chloride, and sulfate, which are attributed to the marine meta-sedimentary origin of the host rock although it is also influenced by the hydrothermal mineralization near the HLFZ.

The groundwater quality within the HLFZ is also variable and can be characterized as a mixture of the phyllite and greenstone groundwater with dissolved constituents released from the minerals associated with hydrothermal alteration and intrusions [which also contain some pyrite] superimposed on the mixture. (Lechner and Kuhl, 1990; Kuhl and Lechner, 1990; TRC, 1999.)

Within the HLFZ and phyllite areas, the variability of conditions make it difficult to predict groundwater conditions at any new well installed within this area. For example, GWM-8 and GWM-17 (former pre-mine wells located under the northern end of West ODS) are located only 500 feet apart and within the phyllite near the HLFZ. GWM-8 was 200 feet deep and had a TDS range of 11,900 to 12,900 mg/L and GWM-17 was 62 feet deep and had a TDS range of 1,280 to 2,060 mg/L. Wells GWM-9 and GWM-38 are also located only approximately 600 feet apart within the phyllite near the HLFZ. GWM-9 is 200 feet deep and has a TDS range of 2,000 to 3,440 mg/L and GWM-38 is 80 feet deep and has a TDS range of 19,800 to 31,100 mg/L.

Over the past 19-year closure period, approximately one dozen new wells have been installed, and while no new water quality types or conditions were encountered, none of these new wells had the water quality conditions that were expected based on nearby water quality and geology.

Data previously submitted to the RWQCB indicated that GWM-1, an off-site monitoring well that was installed in 1987 and later converted to a supply well by the landowner. (GeoSyntec, 2003.) GWM-1 is completed in the greenstone outside of the boundary of the RMKM Site, just east of the northern extension of the Littlejohns Fault. Baseline TDS concentrations at this location ranged between 130 and 300 mg/L. The landowner found that if the well were used consistently, the TDS concentration increased to high levels (i.e., >2,000 mg/L). When pumping is stopped, the water quality improved to the baseline levels. This supports the State Board's conclusion that, even in areas of low TDS concentrations where there is a thin, shallow layer of good-quality groundwater, groundwater quality has been known to deteriorate under pumping conditions, presumably as deeper, more mineralized water is captured. (SWRCB/OCC File No. A-1569.)

Information regarding the groundwater quality and quantity in wells near the Site was provided by the Calaveras County Environmental Management Agency, Environmental Health Department, Agency Administrator, Department Director (Moss, 2011.), and the Calaveras County Water District, Water Resources Manager. (Pattison, 2011.) Both parties indicated that groundwater quality and quantity in the vicinity of the Site is highly variable. In particular, they noted that water in some wells was initially saline, or became saline after some period of use, and that some wells have gone dry.

Many of the properties near the Site have one or more private wells that supply groundwater for domestic and agricultural uses on their associated properties. As stated in the Urban Water Management Plan 2010 prepared for Calaveras County Water District, "Groundwater has historically not been a long-term reliable source of water supply for large areas of the District. Groundwater that is available is through fractured rock systems that characteristically produce small and unpredictable

ATTACHMENT B

California Environmental Quality Act
Environmental Checklist

Amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to Provide a Groundwater Regulatory Framework towards Closure of the Royal Mountain King Mine Site, Calaveras County

Environmental Factors Checklist

California Environmental Quality Act Requirements

The Central Valley Regional Water Quality Control Board (hereafter Central Valley Water Board or Board) is the Lead Agency under the California Environmental Quality Act (CEQA)(Pub. Resources Code, § 21000 et seq.) and is therefore responsible for evaluating potentially significant environmental impacts that may occur as a result of proposed changes to the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan). The Secretary of Resources has determined that the Board's Basin Planning Process qualifies as a certified regulatory program pursuant to Public Resources Code section 21080.5 and California Code of Regulations, title 14, section 15251(g). This determination means that the Board may prepare Substitute Environmental Documentation, which includes the Staff Report and this Environmental Factors Checklist, instead of preparing an environmental impact report. The Substitute Environmental Documentation satisfies the requirements of State Water Board's regulations for the implementation of CEQA for exempt regulatory programs. (Cal. Code Regs. tit. 23, §§ 3775 et seq.)

This Environmental Evaluation documents an analysis of potential environmental impacts that could occur due to the implementation of the proposed alternative discussed in the Staff Report. The evaluation is organized into three sections: (1) a description of the Proposed Project, (2) an Environmental Factors Checklist, which includes a discussion of the potential environmental impacts and mitigation measures for each of the 18 resource categories, and (3) a final Determination.

Proposed Project

The former Royal Mountain King Mine Site (RMKM Site) is located in southwestern Calaveras County. Meridian Gold Company (Meridian) conducted gold mining operations at the RMKM Site from 1989 to 1994. The project is a Proposed Amendment to the Basin Plan that would de-designate certain groundwater beneficial uses at portions of the RMKM Site, require Meridian to continue to implement its current groundwater management strategy, and provide variances for certain constituents related to industrial beneficial uses. These regulatory measures would allow Meridian to close the inactive mine under closure criteria that are reflective of the relatively poor quality of the groundwater that naturally occurs within portions of the RMKM Site.

1. **Project title:**

   Amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to Provide a Groundwater Regulatory Framework towards Closure of the Royal Mountain King Mine Site, Calaveras County

2. **Lead agency name and address:**

   California Regional Water Quality Control Board, Central Valley Region
   11020 Sun Center Drive, #200, Rancho Cordova, CA 95670

3. **Contact person and phone number:**

   Gene Davis, Engineering Geologist, (916) 464-4687
   Sue McConnell, Senior Water Resources Control Engineer, (916) 464-4798

4. **Project location:**

   The RMKM Site is located in the western foothills of the Sierra Nevada, south of Salt Spring Valley in Calaveras County, California.

5. Project sponsor's name and address:

California Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive, #200, Rancho Cordova, CA 95670

6. Description of project:

The Central Valley Water Board is proposing an amendment to the Basin Plan with the following elements:

1. Site-specific Basin Plan implementation provisions that will require Meridian to continue to implement a groundwater management strategy designed to ensure that existing groundwater impacts do not spread.
2. The de-designation of the municipal and domestic supply (MUN) and agricultural supply (AGR) groundwater beneficial uses in certain areas of the RMKM Site where levels of total dissolved solids (TDS) exceed 3,000 mg/L, and in areas underneath and immediately downgradient of the waste management units that have not yet been closed.
3. The establishment of groundwater variances for the industrial service supply (IND) and industrial process supply (PRO) groundwater beneficial uses for certain constituents in the same area as the MUN and AGR de-designation.

While the de-designation of some areas beneath and downgradient of the waste management units is inconsistent with the *Sources of Drinking Water Policy*, the Board will request that the State Water Board make a site-specific modification to the *Sources of Drinking Water Policy* to resolve this inconsistency. This de-designation will allow the groundwater management strategy to be implemented consistent with the Board's Basin Plan.

Implementation Actions

The Central Valley Water Board proposes to de-designate the MUN and AGR beneficial uses and establish a variance for the IND and PRO beneficial uses of groundwater in areas of the RMKM Site. In these areas, the Central Valley Water Board will not seek compliance with water quality objectives associated with these uses, since the groundwater in these areas does not support, or is not likely to support, these uses.

The Central Valley Water Board will continue to protect existing designated beneficial uses in areas unaffected by the Proposed Amendment. The proposed groundwater management strategy for protecting existing designated beneficial uses will not require active management of all groundwater. Good-quality groundwater will remain under northern and eastern areas of the RMKM Site. Meridian's continued implementation of its groundwater management strategy will include:

- Maintaining the lowest practicable water surface elevation in Skyrocket Pit Lake with the only surface water discharge point being governed by NPDES permit. This will be accomplished by maximizing the amount of surface water discharges from Skyrocket Pit Lake as authorized by the NPDES permit or other agreed-to methods.
- Pumping surfacing groundwater from seepage collection sumps at the FTR LCRS and the toes of the Gold Knoll ODS and West ODS to Skyrocket Pit Lake.
- Preventing statistically significant degradation of water quality in groundwater immediately surrounding the area delineated in Figure 5 through a monitoring program based upon baseline groundwater quality conditions.

The Board currently regulates Meridian's activities at the RMKM Site under two permits: a set of closure waste discharge requirements (WDRs) issued pursuant to Water Code section 13263 to

regulate the closure of the waste management units, and a federal NPDES permit to regulate a point source discharge from Skyrocket Pit Lake to surface waters. An earlier set of closure WDRs, along with a companion cease and desist order (CDO) issued pursuant to Water Code section 13301, were vacated by the State Water Board because the State Water Board found that it was inappropriate for the Central Valley Water Board to require Meridian to install a cover over the overburden disposal sites to protect underlying poor-quality groundwater. (State Water Board Order WQO-2004-0007.) Following the adoption of the Proposed Amendment, the Central Valley Water Board will update the closure WDRs for RMKM. The Board will continue to impose monitoring requirements in both the new WDRs and the existing NPDES permit.

7. Setting and surrounding land uses:

The RMKM Site is located in an area of broad, open grasslands and rolling oak woodlands in western Calaveras County. Land uses around the RMKM Site include rural residential, inactive mining and cattle grazing. The RMKM Site straddles the northwestward-trending Hodson/Littlejohns Fault Zone ("HLFZ") – the westernmost fault zone included in the broad Bear Mountain Fault Zone. The HLFZ consists of the Hodson Fault Zone (to the west) and the Littlejohns Fault Zone, to the east. The rocks between the Hodson Fault Zone and the Littlejohns Fault Zone consist of structurally interleaved, steeply dipping, probably lenticular bodies of greenstone and phyllite. The Hodson Fault Zone separates the Salt Spring Slate (predominantly phyllite), to the west, from intermixed phyllite and greenstone units within the HLFZ, to the east. The Littlejohns Fault Zone separates the intermixed phyllite and greenstone units within the HLFZ, to the west, from predominantly greenstone, to the east.

8. Other public agencies whose approval is required:

State Water Resources Control Board
Office of Administrative Law

Environmental Factors Checklist

This section presents the impacts and mitigation, where applicable, for the proposed implementation alternatives evaluated in the Staff Report. The Environmental Factors Checklist is organized into 18 resource categories, each of which includes a description of potential impacts, and mitigation.

I. Aesthetics
II. Agriculture and Forestry Resources
III. Air Quality
IV. Biological Resources
V. Cultural Resources
VI. Geology/Soils
VII. Greenhouse Gas Emissions
VIII. Hazards & Hazardous Materials
IX. Hydrology/Water Quality
X. Land Use Planning
XI. Mineral and Energy Resources
XII. Noise
XIII. Population and Housing
XIV. Public Services
XV. Recreation
XVI. Transportation/Traffic
XVII. Utilities/Service Systems
XVIII. Mandatory Findings of Significance

The "Environmental Factors Checklist" has four categories. Each category is associated with a specific level of potential impact that the proposed implementation of the proposed Basin Plan amendment could have on environmental resources.

No Impact applies where the project does not create an impact in that category.

Less than Significant Impact applies where the project creates no significant impacts, only less than significant impacts.

Less Than Significant with Mitigation Incorporated applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact."

Potentially Significant Impact is appropriate where there is substantial evidence that an effect may be significant.

The baseline for this environmental impact analysis is the current environmental conditions at the RMKM Site, which includes Meridian's current groundwater management strategy. The Proposed Amendment was developed after the Board investigated the existing geologic and environmental conditions at the RMKM Site; the Proposed Amendment will revise the current groundwater designations in the Basin Plan on the basis of that analysis. The Proposed Amendment will remove the MUN and AGR groundwater beneficial use designations in areas of the RMKM Site where groundwater does not currently support, or is not likely to support, these uses. The Board will continue to protect these beneficial uses in other areas of the RMKM Site. The municipal and domestic supply (MUN) and agricultural supply (AGR) groundwater beneficial uses will be de-designated only in areas where levels of total dissolved solids exceed 3,000 mg/L, underneath the waste management units that have not already been closed, and immediately downgradient of those units. The Board also proposes to establish a variance for the industrial service supply (IND) and industrial process supply (PRO) beneficial uses for certain constituents to reflect high concentrations of these constituents found in groundwater in the same areas proposed for MUN and AGR groundwater beneficial use de-designation. The Proposed Amendment requires Meridian to continue to implement its current groundwater management strategy to ensure that any existing groundwater quality impacts do not spread. The Environmental Factors Checklist begins on the next page.

ENVIRONMENTAL FACTORS	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
I. AESTHETICS **Would the Project:**				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. Therefore, the proposed project will not affect scenic vistas or degrade visual character, nor will it result in any visible changes. The proposed project will have no impact on aesthetic resources.				
II. AGRICULTURE AND FOREST RESOURCES In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Boards. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

ENVIRONMENTAL FACTORS	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The proposed project will have no impact on agriculture or forest agriculture resources. There are no known agricultural uses currently or reasonably expected in the portions of the Site in which the AGR beneficial use would be de-designated.				
III. AIR QUALITY Where available, the significance criteria established by the applicable air quality management or air pollution control the District may be relied upon to make the following determinations. **Would the Project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
The proposed Basin Plan Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The proposed project will have no effect on air quality.				
IV. BIOLOGICAL RESOURCES **Would the Project:**				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒

ENVIRONMENTAL FACTORS	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal, pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The proposed project will not affect any fish or wildlife resources, nor will it affect any sensitive species, habitat, or habitat protection plan. Therefore, the proposed project will have no adverse effect on biological resources.				
V. CULTURAL RESOURCES **Would the Project:**				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The proposed project will have no impact on cultural resources.				

ENVIRONMENTAL FACTORS	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
VI. GEOLOGY AND SOILS **Would the Project:**				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The proposed project will have no impact on geology and soils.				
VII. GREENHOUSE GAS EMISSIONS **Would the Project:**				
a) Generate Greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☒
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

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The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The proposed project will have no impact on greenhouse gas emissions.				
VIII. HAZARDS AND HAZARDOUS MATERIALS **Would the Project:**				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The proposed project will not create, emit, or expose people to, hazardous materials. Therefore, the proposed project will have no impact from hazards and hazardous materials.				
IX. HYDROLOGY AND WATER QUALITY **Would the Project:**				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒

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b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

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The proposed project will amend the Basin Plan to de-designate beneficial uses at portions of the RMKM Site and will provide variances for certain constituents related to industrial beneficial uses. The Board proposes to de-designate the MUN and AGR beneficial uses in portions of the RMKM Site where the groundwater does not support, or is not likely to support, these uses; these are areas where total dissolved solids exceed 3,000 mg/L, along with areas underneath and immediately downgradient of the unclosed WMUs. The Board also proposes to establish variances for certain constituents related to the industrial service supply (IND) and industrial process supply (PRO) beneficial uses. By establishing the variances, the Board will not require protection of any IND and PRO uses that are dependent on low concentrations of these constituents, as these constituents already occur at high concentrations in these portions of the RMKM Site. Though the proposed Basin Plan Amendment will remove the MUN and AGR beneficial use designations at portions of the RMKM Site, the MUN and AGR beneficial uses will only be eliminated in areas where the groundwater does not currently support, or is not expected to support, these uses. (The areas underneath and immediately downgradient of the WMUs are not expected to support these uses because it is reasonable to conclude that groundwater in these areas should not be used for MUN and AGR purposes due to the fact that the WMUs have not been constructed to Title 27 standards.) Furthermore, though the Board will not be required to evaluate whether or not waste discharges will impact any IND and PRO uses dependent on the constituents subject to the variances when the variances are incorporated into the Basin Plan, these constituents already occur at high concentrations in these areas. Though groundwater quality may be degraded to a limited extent in the areas where beneficial uses are de-designated, existing and future uses will not be impacted as a result of the Proposed Amendment because the groundwater either already does not support these uses or because these uses are incompatible with the already-constructed WMUs. In addition, the Board will continue to protect beneficial uses in areas that have not been de-designated, which includes areas at the Site and all areas off of the Site, thereby preventing any impacts from spreading and affecting existing beneficial uses. The reasonably foreseeable method of compliance with the proposed Basin Plan Amendment is for Meridian to continue implementing its current groundwater management strategy. Since no existing uses will be impacted, and since no additional construction or treatment is required to implement the provisions of the proposed Basin Plan Amendment, the environmental impacts will be less than significant.				
X. LAND USE AND PLANNING **Would the Project:**				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The project does not affect the land use at the RMKM Site and will not have any impact on land use planning.				

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XI. MINERAL RESOURCES **Would the Project:**				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The project will have no impact on mineral resources.				
XII. NOISE **Would the Project result in:**				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The project will not create or expose any persons to additional noise.				

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XIII. POPULATION AND HOUSING **Would the Project:**				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The proposed project will not induce population growth or displace existing housing or people.				
XIV. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The proposed project will not impact fire and police protection, schools or parks, therefore, will have no effect on public services.				
XV. RECREATION				
Would the project: a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒

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b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. Therefore, the proposed project will not increase the use of existing neighborhood and regional parks or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Therefore, the proposed project will have no effect on recreation.				
XVI. TRANSPORTATION / TRAFFIC **Would the Project:**				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Change air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. Therefore, the proposed project will not increase ground or air traffic, hazards, parking capacity, or conflict with adopted transportation plans and policies. Therefore, the proposed project will have no effect on transportation and traffic.				

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XVII. UTILITIES AND SERVICE SYSTEMS **Would the Project:**				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. Therefore, the proposed project will not require wastewater treatment, result in new or expanded wastewater treatment facilities that would cause significant environmental effects with construction or result in new storm water drainage facilities. Therefore, the proposed project will have no effect on utilities and service systems.				
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to 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, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒

ENVIRONMENTAL FACTORS	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒
The Proposed Amendment is a regulatory measure that will not require, promote, induce, or authorize any activities that have not previously been authorized or are not currently being implemented. The project will not cause changes to the environment either individually or cumulatively.				

Based on the analysis of potential environmental impacts associated with implementation of the Basin Plan Amendment, none of the 18 environmental factors listed in the Environmental Factors Checklist would have, individually or cumulatively, a "Potentially Significant Impact." Also, a statement of overriding considerations is not necessary since there are no significant or unavoidable environmental effects associated with this project.

(1) Determination

On the basis of this initial evaluation:

☒ The proposed project COULD NOT have a significant effect on the environment, and, therefore, no alternatives or mitigation measures are proposed.

☐ The proposed project MAY have a significant or potentially significant effect on the environment, and therefore alternatives and mitigation measures have been evaluated.

Original signed by
PAMELA C. CREEDON
Executive Officer
California Regional Water Quality Control Board
Central Valley Region

3/28/2014
DATE