CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833-2937
Tel 916.920.0300
Fax 916.920.8463

CH2MHILL

June 20, 2003
176042

Dr. James Reede
Siting Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814-5504

RE: SPPE Supplement A
MID Electric Generation Station (MEGS), 03-SPPE-1

Dear Dr. Reede:

On behalf of the Modesto Irrigation District, please find attached 80 copies and one original of the SPPE Supplement A, and 20 CD-ROMS containing Supplement A. This supplement analyzes potential impacts to the project from a change in the general arrangement to add a zero-liquid discharge (ZLD) system.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

c: Project File
Proof of Service List

MID ELECTRIC GENERATION STATION (MEGS) (03-SPPE-1)

SPPE SUPPLEMENT A
(Zero-liquid Discharge Arrangement)

Submitted by

MODESTO IRRIGATION DISTRICT (MID)

JUNE 20, 2003

CH2MHILL

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

CONTENTS

1.0 INTRODUCTION

Modesto Irrigation District (MID) proposes to develop a natural-gas-fired peaking generating facility in the City of Ripon, California. The proposed MID Electric Generation Station (MEGS) will be a high-efficiency, simple-cycle facility that will support MID's electrical distribution system. On April 21, 2003, MID filed a Small Power Plant Exemption (SPPE) Application with the California Energy Commission (CEC).

In the SPPE Application, MID included the use of a lime solids contact clarifier system to reduce the total dissolved solid (TDS) concentration level in the plant process wastewater stream that was to be discharged to the City of Ripon sanitary sewer system. However, due to regulatory issues associated with the project's wastewater discharge to the city's system, the lime solids contact clarifier system is being eliminated in its entirety from the project design and is being replaced by a zero-liquid discharge (ZLD) system. The proposed ZLD system will accept water treatment plant reverse osmosis (RO) reject water and chiller cooling tower blowdown wastewater streams to eliminate this process wastewater discharge to the City of Ripon sanitary sewer system. The ZLD system will result in environmental benefits, namely, the elimination of process wastewater discharge to the sanitary sewer and produce a significant reduction in raw water needs for the project. In addition, other minor changes to the site layout are presented in this Supplement. This supplemental filing (Supplement A) presents an analysis of the potential environmental impacts of these changes.

2.0 REVISED PROJECT DESCRIPTION

2.1 Introduction

The Modesto Irrigation District Electric Generation Station (MEGS) project as originally proposed, utilized non-potable water from the City of Ripon which was to be discharged to the City's sanitary sewer system. However, in a letter dated May 9, 2003, staff from the Central Valley Regional Water Quality Control Board (CVRWQCB) indicated their concerns about the project's wastewater discharge increasing TDS levels in the City's wastewater effluent. Because the project effluent would contribute to an increase in overall TDS levels in the City's effluent, CVRWQCB staff stated that the project-related increases would likely lead to groundwater degradation. In order to discharge to the City of Ripon's system, the CVRWQCB would require submittal of a Report of Waste Discharge, which would result in project-specific waste discharge requirements including extensive monitoring.

As a result, the Modesto Irrigation District has revised its project description to utilize a zero liquid discharge (ZLD) system. This system eliminates the need for discharge into the sewer. As a result of this project change, concerns about the project's contribution to TDS levels in the City's wastewater effluent and subsequent groundwater degradation have been eliminated and no further action by the CVRWQCB to consider project-specific waste discharge requirements is needed.

2.2 ZLD OPTIONS

The revised project description includes the elimination of the lime solids contact clarifier total dissolved solids reduction system which was originally proposed for treatment of the project's wastewater discharge and replaces it with a ZLD system. There are three ZLD technologies which achieve the same goal of enabling MEGS to be a zero-liquid discharge facility, but with potentially different costs impacts to MID and its customer-ratepayers. Also, the cost of final disposal can vary widely depending on the final waste product's form (a solid, damp filter cake, or low-volume highly concentrated liquid). Below is a description of each of the ZLD technology options.

OPTION 1 - ZLD Brine Concentrator/Spray Dryer Description

There are three wastewater streams associated with the MEGS project: water treatment plant RO reject water, chiller cooling tower blowdown water, and multi-media filter backwash water. When the MEGS project is operating, these wastewater streams will be sent to a new wastewater storage tank. Wastewater from the storage tank will be fed to the ZLD brine concentrator/spray dryer system for processing.

A brine concentrator process will be used to concentrate and evaporate the plant process wastewater. Recovered distillate (pure water) from the brine concentrator will be sent to the raw water storage tank for reuse in the plant makeup water system. The small amount of highly concentrated brine solution, which represents the only process wastewater stream not reclaimed for reuse, will be sent to an electrically heated spray dryer system where the final wastewater will be evaporated leaving a dry solid suitable for landfill disposal.

OPTION 2 - ZLD High Efficiency Reverse Osmosis / Crystallizer Description

In order to treat the final wastewater, this option uses a conventional water softener followed by a high efficiency reverse osmosis system, followed by a final crystallizer. The final waste product would be a low volume highly concentrated brine solution. By utilizing a water softener to remove the hardness and alkalinity in the water upstream of the RO equipment, the overall efficiency of the RO process is enhanced thereby reducing the total amount of process wastewater to be treated in the final ZLD equipment. There will be less volume of wastewater to be processed in the final crystallizer, which will produce a highly concentrated liquid brine waste. The small amount of highly concentrated brine waste will be trucked off site for treatment and disposal.

OPTION 3 - ZLD High Efficiency Reverse Osmosis / Crystallizer / Filter Press Description

This option is identical to Option 2 except that the crystallizer effluent is further processed in a conventional filter press to produce a low moisture content salt cake. Recovered water from the filter press is returned to the crystallizer for processing. The final filter cake will be trucked off site for landfill disposal.

The specific ZLD technology that offers the best value to MID and its customer-ratepayers will be determined in final design, after a thorough review and evaluation of the various arrangements with respect to the capital costs, long-term operating costs, and long-term maintenance costs. However, for purposes of the assessment of potential impacts, the Option 1 brine concentrator with electric spray dryer is considered worst case, and any alternate that may be selected in final design would have lower potential impacts from an environmental standpoint.

ZLD Option 1 using a brine concentrator and spray dryer is considered to be a worst case scenario due to the following:

- The brine concentrator would be the tallest piece of equipment from a visual perspective
- Option 1 will have air emissions from the spray dryer vent. (Options 2 and 3 have no will have no air emission vent point).
- Option 1 will consume the most chemicals
- Option 1 will generate the most waste material
- Option 1 will consume the highest parasitic electrical load
- Option 1 will require the most routine maintenance

Figures 1a, 1b, 2a and 2b (all figures are provided at the end of the document) present revised site and elevation plans showing the location of the proposed ZLD system and associated equipment. The primary ZLD equipment would be in the same location under all three options. However, the elevation plans were provided for Option 1 - brine concentrator and spray dryer since it has the tallest feature (70′) compared to Option 2 and 3 (40′). The ZLD system design is shown schematically in Figure 3. A schematic has only been presented for Option 1 due to the fact that the overall location and arrangement of the equipment, as well as the fit, form and function of all three ZLD equipment options are essentially the same.

The ZLD system would require other minor changes to the project design and layout required as a result of the addition of the ZLD system. These changes are presented below with a description of the reason for the change.

- Eliminated the lime solids contact clarifier system (not needed with a ZLD system).
- Increased the capacity of the demineralized water storage tank to 300,000 gallons to allow for increased plant operational flexibility. The tank size will allow for 72 hours of continuous full load plant operation.
- Reduced the size of the raw water storage tank (non-potable water storage) slightly to 250,000 gallons to account for the recovered water from the ZLD system.
- Incorporated a new 250,000 gallon wastewater storage tank into the plant design. The tank is needed to allow for wastewater surge capacity for the ZLD system. Since the ZLD system is a heat transfer process, the process does not lend itself to frequent startup and shutdown cycles. The new wastewater storage tank will allow for batch process operation of the ZLD system to optimize its effectiveness.

These changes are required under all three ZLD options.

3.0 ANALYSIS OF SUPPLEMENT A

This section contains an assessment of potential environmental impacts resulting from implementation of the Supplement A modifications.

3.1 Air Quality

Of the three options, only Option 1 affects air quality due to the addition of the spray dryer system. Options 2 and 3 do not have any air emission sources. The spray dryer will emit small amounts of particulate matter that must be accounted for in the air quality emissions and modeling analyses. Additionally, the wastewater processed by the spray dryer contains small amounts of toxic contaminants that must be accounted for in the screening health risk assessment for the project.

The Applicant has modified the Air Quality and Public Health sections to include the spray dryer system. The revised Air Quality and Public Health sections (including applicable Appendices) of the SPPE are being submitted with this Amendment. The revised Table 8.1-20 indicates that the spray dryer will emit up to 1.2 pounds per day and 0.2 tons per year of PM_{10}. Table 8.1-26 shows that the maximum modeled PM_{10} impacts from the MEGS project increase only slightly as a result of the spray dryer. Additionally, the screening health risk assessment results in Table 8.1-29 show that the spray dryer does not result in impacts exceeding any health risk based criteria.

Finally, the Applicant has updated Table 8.1-21, "Noncriteria Pollutant Emissions," to reflect the use of Well #11 water in the cooling towers and the spray dryer. The revised health risk assessment also addresses the use of this water source and eliminates the use of Well #6, which contains VOC contaminants. Also, the Applicant has updated Tables 8.1-31, 32, and 33 to include the spray dryer in the offsets and mitigation calculations, and to include the most recent list of ERC certificates owned or under contract to the Applicant.

3.2 Biological Resources

Potential impacts to Biological Resources are expected to be the same than those described in Section 8.2 of the SPPE Application as the new equipment will all be located on the existing footprint of the MEGS site. Running additional water cycles through the cooling tower will increase the TDS in the cooling tower drift. The increased salt deposition from cooling tower drift will not adversely affect the most sensitive plant species.

3.3 Cultural Resources

Potential impacts to Cultural Resources are expected to be the same than those described in Section 8.3 of the SPPE Application as the new equipment will all be located on the existing footprint of the MEGS site. The proposed changes in the project description would not result in Cultural Resource impacts other than those previously addressed in the SPPE Application.

3.4 Land Use

Potential impacts to Land Uses are expected to be the same as those described in Section 8.4 of the SPPE Application since the new equipment will all be located on the existing foot print of the MEGS site. The proposed changes in the project description would not result in any Land Use impacts that were not previously addressed in the SPPE Application.

3.5 Noise

Potential impacts to noise are expected to be the same as those described in Section 8.5 of the SPPE Application for either Option 1, 2 or 3. The new equipment will be specified or modified such that noise levels at three feet do not exceed 85 dBA. Enclosures, barriers, lagging or other acoustical mitigation measures will be implemented as needed to ensure the resulting receptor noise levels do not increase from those presented in Section 8.5 of the SPPE Application.

3.6 Public Health

Potential impacts to Public Health are discussed in the Air Quality section above. The spray dryer will emit a small amount of toxic air contaminants that must be accounted for in the screening health risk assessment. The revised Public Health section (included with the revised Air Quality Section referenced in Section 3.1 of this Amendment) includes the spray dryer emissions and accounts for the use of Well #11 water in the cooling tower.

3.7 Worker Health and Safety

Potential impacts to Worker Health and Safety were described in Section 8.7 of the SPPE Application. The proposed changes in the project description will not result in Worker Health and Safety impacts other than those previously identified.

3.8 Socioeconomics

Potential impacts to Socioeconomic Resources were described in Section 8.8 of the SPPE Application. The proposed changes in the project description will not result in Socioeconomic Resources impacts different than those previously identified.

3.9 Agriculture and Soils

Potential impacts to Agriculture and Soils were described in Section 8.9 of the SPPE Application. The proposed changes in the project description will result in the same impacts to Agricultural and Soils as the new equipment will all be located on the existing footprint of the MEGS site.

3.10 Traffic and Transportation

Potential impacts to Traffic and Transportation were described in Section 8.10 of the SPPE Application. During operations, ZLD Options 1, 2, or 3 would result in approximately one additional truck trip per week for salt cake or brine removal, and potentially one additional truck trip per month for the delivery of additional water treatment chemicals. The impact of these additional truck trips will not result in impact different than those previously identified in Section 8.10 of the SPPE Application.

3.11 Visual Resources

The difference between the three ZLD system options being considered by MID from a visual resource perspective is that Option 1's tallest feature is a 70-foot-high brine concentrator evaporator, and the tallest feature for Options 2 and 3 is an approximately 40-foot-high crystallizer structure.

Figure 8.11-7c (provided at end of the document) is a simulation depicting the MEGS project with the Option 1 ZLD system, as seen from the KOP 1 residence. This simulation of the Option 1 ZLD system is considered the worst-case representation of what would be seen from KOP 1. In the simulation, the 70-foot-high ZLD brine concentrator evaporator is the narrow vertical piece of equipment to the left of the 85-foot-high exhaust stack.

As shown in Figure 8.11-7c, adding the Option 1 ZLD system to the MEGS project would not create any additional impacts from those discussed in the SPPE. When comparing the revised simulation (Figure 8.11-7c) to the original simulation included in the SPPE (Figure 8.11-7b), there are some minor, but noticeable, differences when viewed side-by-side. However, the effects on the view from KOP 1, as shown in Figure 8.11-7c, would be virtually the same as those presented in the SPPE. Therefore, the visual impacts on the view from KOP 1 resulting from the addition of the Option 1 ZLD system would remain less than significant.

Because the crystallizer for Options 2 and 3 of the ZLD system would be shorter than Option 1, and visual impacts are less than significant for Option 1, visual impacts associated with Options 2 and 3 would also be less than significant. Therefore, simulations for those two options were not prepared. As a frame of reference for the 40-foot-high crystallizer associated with Options 2 and 3, it should be noted that the curved pipe-like structure shown connecting to the ZLD evaporator in Figure 8.11-7c is 42 feet above the ground. Therefore, the tallest structure of Options 2 and 3 would appear approximately as high as the pipe shown in that simulation.

It is acknowledged that the view from KOP 2 toward the project site is closer than the view from KOP 1; however, as shown in Figure 8.11-8b in the SPPE, the visibility of project features from KOP 2 is less than from KOP 1 due to existing intervening urban development that is seen from this viewpoint. The visual effects at KOP 2 from the addition of the ZLD system (either Option 1, 2, or 3) are expected to be less noticeable than the changes noticed at KOP 1, therefore, a simulation showing the project with a ZLD system from KOP 2 was not prepared.

3.12 Hazardous Materials Handling/Waste Management

Hazardous Materials

Adding the ZLD system to the plant would increase the quantities of the following chemicals previously discussed in the SPPE application:

- Sodium hydroxide - A 50 percent solution of this chemical was already planned to be used on site for reverse osmosis equipment scale protection. It will to be stored in a 200-gallon tote at the water treatment building. A new 200-gallon tote will be added and located near the ZLD equipment area if ZLD Option 1 is selected. For ZLD Options 2 and 3, an additional 400 gallons of sodium hydroxide would be needed. It would be stored in a 600-gallon tote in the water treatment system area.
- Sulfuric acid– A 93 percent solution of this chemical was already planned to be used onsite for pH adjustment in the chiller cooling towers. It will to be stored in a 4,200-gallon tote. A new additional 400-gallon tote will be used and located either near the ZLD equipment area or in the water treatment system area, depending on which ZLD option is selected.

In addition, the ZLD system would introduce the use of the following new chemicals at MEGS:

- Calcium sulfate (for initial startup of brine concentrator) – 8,000 lbs, mixed in 50 gallon drum (during startup only).
- Anti-foam (for crystallizer to control foaming) - 100 gallons for ZLD Option 2 or 3.
- Chelating agents (for cleaning of brine concentrator) - 100 gallons (used once per year for maintenance).
- Calcium chloride (for ZLD system chemical control for ZLD Option 1) – 200 gallons
- Sodium sulfate (for ZLD system Option 1) - 400 gallon
- Bi-sulfite (for RO residual chlorine control in ZLD Options 2 or 3) – 100 gallons

For completeness, SPPE Application Table 8.12-2 has been revised to include these chemicals.

The effect of the proposed changes does not alter the conclusions presented in Section 8.12 of the SPPE Application. The impacts of adding a ZLD system are consistent with those impacts previously identified in the SPPE Application.

Waste Management

Adding the ZLD system to the plant would eliminate the amount of wastewater to be discharged, but increase the amount of solid waste generated by MEGS. ZLD Option 1 would produce approximately one ton per day of a dry non-hazardous solid waste to be disposed of at an offsite landfill. The waste would be composed of minerals evaporated from the non-potable water by a brine concentrator/spray dryer system. In addition, a chemical cleaning waste stream would be produced once a year from descaling the system.

This waste stream will be a liquid and is anticipated to be a hazardous waste because the cleaning material will be EDTA mixed with water. It will be transported to a Class I hazardous waste treatment or disposal site, such as the Kettleman Hills disposal site in Kings County.

ZLD Option 2 would also produce a liquid waste stream. It would be a highly concentrated liquid from the crystallizer and is anticipated to be non-hazardous. Approximately 250 gallons per day of the waste would be transported to an offsite treatment or disposal facility, such as the Clean Harbors' (Formerly Safety-Kleen's) Buttonwillow Landfill in Kern County.

Under ZLD Option 3, the ZLD system will produce a concentrated non-hazardous filter cake residue (i.e., salt cake) from the RO system and crystallizer. This dried waste will be disposed of in an offsite non-hazardous waste landfill. During base load operation, an average of 0.5 tons per day of this non-hazardous solid waste will be generated and transported off site. Although the resulting salt cake is not expected to be hazardous, analysis of a sample of the salt cake will be performed prior to initial disposal to demonstrate compliance with the disposal facility's waste acceptance criteria. Periodic re-testing will be performed on an as-needed basis.

TABLE 8.12-2
Hazardous Materials—MEGS

Material Name	Chemical Composition	Use	Quantity	Storage Location
		Materials Included in SPPE Application		
Aqueous ammonia (29 percent solution)	Ammonium hydroxide	Control nitrous oxide (NO_x) emissions through selective catalytic reduction (SCR)	10,000 gal.	West of and adjacent to the gas compressors
Cleaning chemicals/ detergents	Various	Periodic cleaning	10 gal.	Water treatment building/service building
Laboratory reagents (liquid)	Various	Water/wastewater laboratory analysis	10 gal.	Water treatment building
Laboratory reagents (solid)	Various	Laboratory analysis	50 lb.	Laboratory
Synthetic lubrication oil	Oil	Lubricate rotating equipment (e.g., combustion turbine bearings)	280 gal.	Contained within equipment
Mineral lubrication oil	Oil	Lubricate rotating equipment (e.g., generator bearings)	782 gal.	Contained within equipment
Mineral insulating oil	Oil	Transformers	10,600 gal.	Contained within GSU and auxiliary transformers
Scale/ corrosion inhibitor (NALCO 23288)	(Various NALCO ingredients)	Cooling tower scale/ corrosion inhibitor	200 gal.	Near cooling tower
Sodium bromide (NALCO STABREX ST40)	Sodium bromide	Cooling tower biocide	200 gal.	Near cooling tower
Sulfuric acid	Sulfuric acid (93 percent)	Cooling tower water pH control	200 gal.	Near cooling tower
Sodium hydroxide	NaOH (50%)	Reverse osmosis equipment scale protection	200 gal.	Water treatment building
Anti-scalant	Anti-scalant NALCO Chemical	Reverse osmosis equipment scale protection	200 gal.	Water treatment building
		New or Additional Quantities of Materials associated with the Addition of a ZLD System		
ZLD Option 1:	**Brine Concentrator and Spray Dryer**			
Sulfuric acid	Sulfuric Acid (93 %)	ZLD system pH control	400 gal	ZLD system area
Sodium Hydroxide	NaOH (50%)	ZLD system chemical Control	200 gal.	ZLD system area
Calcium Chloride	Calcium Chloride	ZLD system chemical control	200 gal.	ZLD system area
Sodium Sulfate	Sodium Sulfate	ZLD system chemical control	40	ZLD system equipment area

TABLE 8.12-2
Hazardous Materials—MEGS

ZLD Option 2:	**High Efficiency RO with Crystallizer (liquid hauled off site)**			
Sulfuric acid	Sulfuric acid (93 %)	RO system pre-treatment pH control	400 gal.	Water treatment system area
Sodium Hydroxide	NaOH (50%)	RO system chemical Control	400 gal.	Water treatment system area
Bi-sulfite	Bi-sulfite	RO residual chlorine control	100 gal	Water treatment system area
Anti-Foam Chemical	Anti-Foam	Crystallizer anti-foam chemical	100 gal	ZLD system equipment area
ZLD Option 3:	**High Efficiency RO with Crystallizer and Filter Press**			
Sulfuric acid	Sulfuric acid (93 %)	RO system pre-treatment pH control	400 gal.	Water treatment system area
Sodium Hydroxide	NaOH (50%)	RO system chemical control	400 gal.	Water treatment system area
Bi-sulfite	Bi-sulfite	RO residual chlorine control	100 gal	Water treatment system area
Anti-Foam Chemical	Anti-Foam	Crystallizer anti-foam chemical	100 gal	ZLD system equipment area

A summary of wastes produced at MEGS and the manner in which they will be handled is presented in Table 8.12-3 below. The table includes the wastes that would be generated by each of the three possible ZLD system options.

TABLE 8.12-3
Waste Management Methods

Source of Waste	Waste Composition	Quantity	Disposal Method
Materials Included in SPPE Application			
Air Pollution Control Devices	Spent SCR and CO Catalyst	Every 5 to 7 years	Recycled to equipment manufacturer
Chemical Feed and Sampling Systems	No waste routinely generated; occasional spills only	No waste routinely generated	Spills pumped from secondary containment into container and reclaimed or disposed of offsite
Construction Waste	Wood, metal, concrete, etc.	0.5 cubic yards per month	Transported to offsite landfill
Electrical Transformers	Waste oil	No waste routinely generated	Pumped from transformer to 55-gallon drum
Lubricating Oils	Waste oil	No waste routinely generated	Pumped from equipment to 55-gallon drum
Fuel Gas System	Blowdown oils	30 gal/month	Blowdown from filters flows to oily/wastewater separator; oil pumped from separator into 55-gal drums and sent for recycling
Chilled Water System Maintenance Activities	Propylene glycol	55 gal/year	Pumped from closed loop cooling system to 55-gal drums and sent for recycling
Municipal Solid Waste	Paper, garbage, plastic, etc.	20 cubic yards per month	Transported to offsite landfill
Misc. Plant Drains	Misc. equip drains, misc. floor drains	5 gpm (intermittent flow)	Discharged to oil water separator, plant sump, and City sanitary sewer
New or Additional Quantities of Materials associated with the Addition of a ZLD System			
ZLD Option 1: Brine Concentrator and Spray Dryer			
ZLD System Dry Solids	Minerals contained in non-potable water	2,010 lbs per day	Transported to offsite landfill
ZLD Chemical Cleaning Waste	EDTA – Ethylene Diamine TetraAcetic Acid mixed with water and containing cleaned scale deposits	6,000 gallons once per year (descaling work performed annually)	Transported to hazardous disposal site
ZLD Option 2: High Efficiency RO With Crystallizer (liquid hauled off site)			
Crystallizer Purge Stream	Highly concentrated liquid containing ions and dissolved solids from the non-potable water source	250 gallons per day	Liquid transported to non-hazardous waste disposal site

TABLE 8.12-3
Waste Management Methods

Source of Waste	Waste Composition	Quantity	Disposal Method
ZLD Option 3: High Efficiency RO With Crystallizer and Filter Press			
Crystallizer Purge Stream	Highly concentrated liquid containing ions and dissolved solids from the non-potable water source	45 gallons per day	Liquid transported to non-hazardous waste disposal site
Filter Press Effluent	Salt cake containing minerals from the non potable water source	0.5 tons per day	Transported to offsite landfill

The additional wastes that would be produced by the addition of a ZLD system would be mainly non-hazardous wastes that would be shipped off site for disposal. Due to the relatively low volume of solid wastes (0.5 to 1 ton per day), the waste is not expected to have a significant impact on landfill capacity in the vicinity of the project.

3.13 Water Resources

Potential impacts on water resources were described in Section 8.13 of the SPPE Application. The proposed changes in the project description will result in fewer potential impacts than those previously identified. The previous project description included the disposal of wastewater, following treatment using a lime clarifier to reduce total dissolved solids (TDS) levels, into the City's domestic sewer system. As described in Table 8.13-4 of the SPPE Application, TDS concentrations in the project effluent, following treatment in the lime clarifier, would be 890 mg/L. In a letter dated May 9, 2003, staff from the Central Valley Regional Water Quality Control Board indicated their concerns about increasing TDS levels in the City's wastewater effluent (from 655 mg/L in 1999 to 736 mg/L in 2002). Because the project effluent would contribute to an increase in overall TDS levels in the City's effluent, staff stated that the project-related increases would likely lead to groundwater degradation. The Regional Board would require submittal of a Report of Waste Discharge, which would result in project-specific waste discharge requirements including extensive monitoring.

The revised project will use a ZLD system that evaporates process wastewater to a solid state (Option 1), damp filter cake (Option 2), or low volume high concentrated liquid (Option 3), thus eliminating the need for discharge into the sewer. As a result of the project change, concerns about the project's contribution to TDS levels in the City's wastewater effluent and subsequent groundwater degradation have been eliminated. No further action by the Regional Board to consider project-specific waste discharge requirements is needed.

Other project sources of wastewater (e.g., toilets, showers, sinks) are still proposed to be discharged into the City's domestic system, but no significant impacts are anticipated from these low-volume, conventional sources.

Use of the ZLD system would allow for greater recirculation of process water, thus reducing the amount of water required to operate the plant. Table 8.13-3 of the SPPE Application shows peak day inflow from the non-potable system to be about 244 gpm. Using the ZLD system would reduce this to approximately 167 gpm. A revised water balance is provided in Figure 4. The revised water balance is representative of all 3 ZLD system options. Figure 4 provides information to update Table 8.13-3 of the SPPE.

3.14 Geologic Hazards and Resources

Impacts from geologic hazards of the proposed facility were described in Section 8.14 of the SPPE Application. The proposed changes in the project description will not result in geologic hazards and resource impacts other than those previously identified.

3.15 Paleontological Resources

Potential impacts to paleontological resources were described in Section 8.15 of the SPPE Application. The proposed changes in the project description will not result in paleontological resource impacts other than those previously identified.

4.0 CUMULATIVE IMPACTS

The cumulative impacts of the proposed project description changes are not expected to be different than those presented in the SPPE Application for the following sections:

- Biological Resources
- Cultural Resources
- Land Use
- Noise
- Public Health
- Worker Health and Safety
- Socioeconomics
- Agriculture and Soils
- Traffic and Transportation
- Geologic Hazards and Resources
- Paleontological Resources

The cumulative impacts of the proposed changes associated with this Supplement for the remaining sections are presented below.

4.1 Air Quality

The Applicant has revised the air quality cumulative impact analysis for the proposed MEGS project and submitted in response to Data Request AQ-26 (The cumulative analysis is being included with the revised Air Quality Appendices referenced in Section 3.1 of this Amendment.). This revised analysis was performed pursuant to the cumulative impact analysis protocol in the SPPE for the MEGS project (SPPEA Appendix 8.1H). The cumulative impacts from the proposed project, including the ZLD system spray dryer, and other new/modified emission sources in the project area are not expected to cause a new violation or contribute significantly to an existing violation of any state or federal air quality standard in the project area.

4.2 Visual Resources

Although there would be minor differences in the views seen from KOPs 1 and 2 due to the addition of a ZLD system to the project, the cumulative visual impacts of the proposed project description changes are not expected to be different than those presented in the SPPE.

4.3 Hazardous Materials Handling/Waste Management

The cumulative hazardous material impacts of the proposed project description changes are not expected to differ much from those presented in the SPPE Application. For the most part, these changes represent an increase in the volume of materials that were already planned to be stored on site (i.e., sulfuric acid and sodium hydroxide). There will be an increase in the quantity of these materials being transported and delivered to the site. It is possible that this will necessitate an increased frequency of deliveries from once to twice per month, but it is more likely that the planned additional storage capacity to be constructed at the site will make additional deliveries unnecessary. The changes proposed to the project will not require the use, storage, or transport of any new highly toxic, reactive or dangerous materials.

It is anticipated that an annual volume of non-hazardous waste generated by the ZLD system of up to 365 tons per year will not have a significant cumulative impact, as there is adequate disposal capacity available for this waste. As stated in the SPPE Application, it is not anticipated that the proposed MEGS Project will result in significant cumulative impacts that could adversely affect public health and safety or the environment.

4.4 Water Resources

Cumulative water resources impacts will result in fewer potential impacts than those presented in the SPPE Application because discharge of process wastewater to the sewer would be eliminated.

5.0 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS CONFORMANCE

The proposed project description changes eliminate the process wastewater discharge to the City of Ripon's sanitary wastewater system and the applicable water resources laws, ordinances, regulations, and standards (LORS). Specifically, the project will no longer require Waste Discharge Requirements from the Central Valley Regional Water Quality Control Board. The LORS analysis contained in the SPPE Application for the other environmental areas (identified in Section 3.0 of this Supplement) remain unchanged and the LORS analyses contained in the SPPE Application are still applicable and the project remains in compliance with these LORS.