rec'd 3-14-02

COGEMA
Mining, Inc.

February 26, 2002

LICENSE SUA-1341
DOCKET NO. 40-8502

Mr. Mel Leach, Chief
Fuel Cycle Licensing Branch, FCSS
c/o Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: SERP Summary - Revised Replacement Pages for the 1996 License Renewal Application

Dear Mr. Leach:

As required by License Section 12.6, the annual SERP summary was included in the recently submitted 2001 ANNUAL EFFLUENT AND MONITORING REPORT. The SERP summary listed the revised pages to the 1996 License Renewal Application that resulted from the safety and environmental reviews during 2001, and stated that they would be sent in a separate submittal. Therefore, the following revised pages are enclosed for replacement in the 1996 License Renewal Application.

Pages 3-37, 5-2 through 5-4 and 6-8 through 6-9A.

Please contact me if you have any questions regarding this letter or the enclosures.

Sincerely,

John Vaselin
Radiation Safety Officer

Enclosures

cc: Donna Wichers - COGEMA
Division Director - NRC, Region IV

WP\2002 MEMO\NRC-ML-2

IE 17
NMSS01 Pub.

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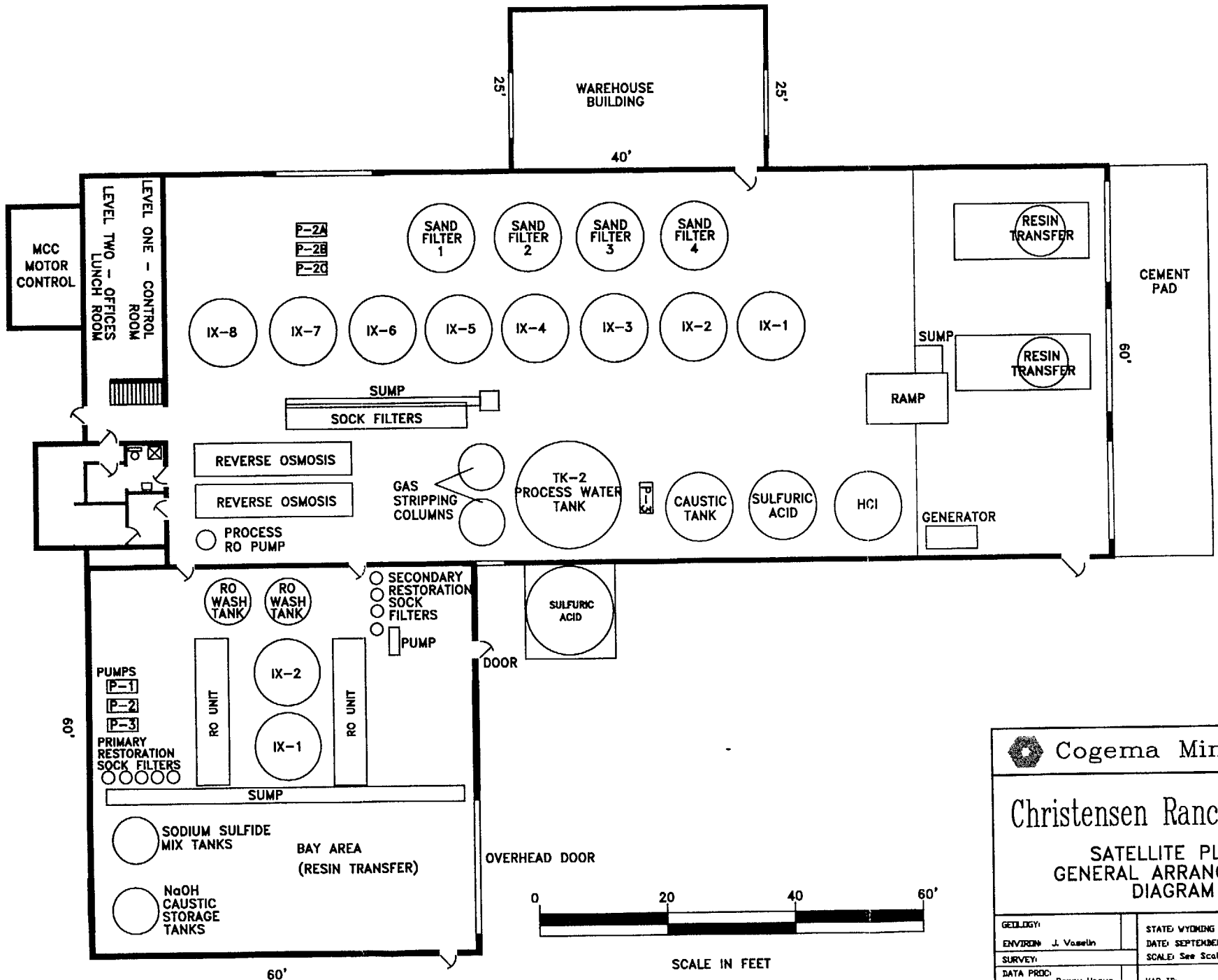


Cogema Mining, Inc.

Christensen Ranch Project

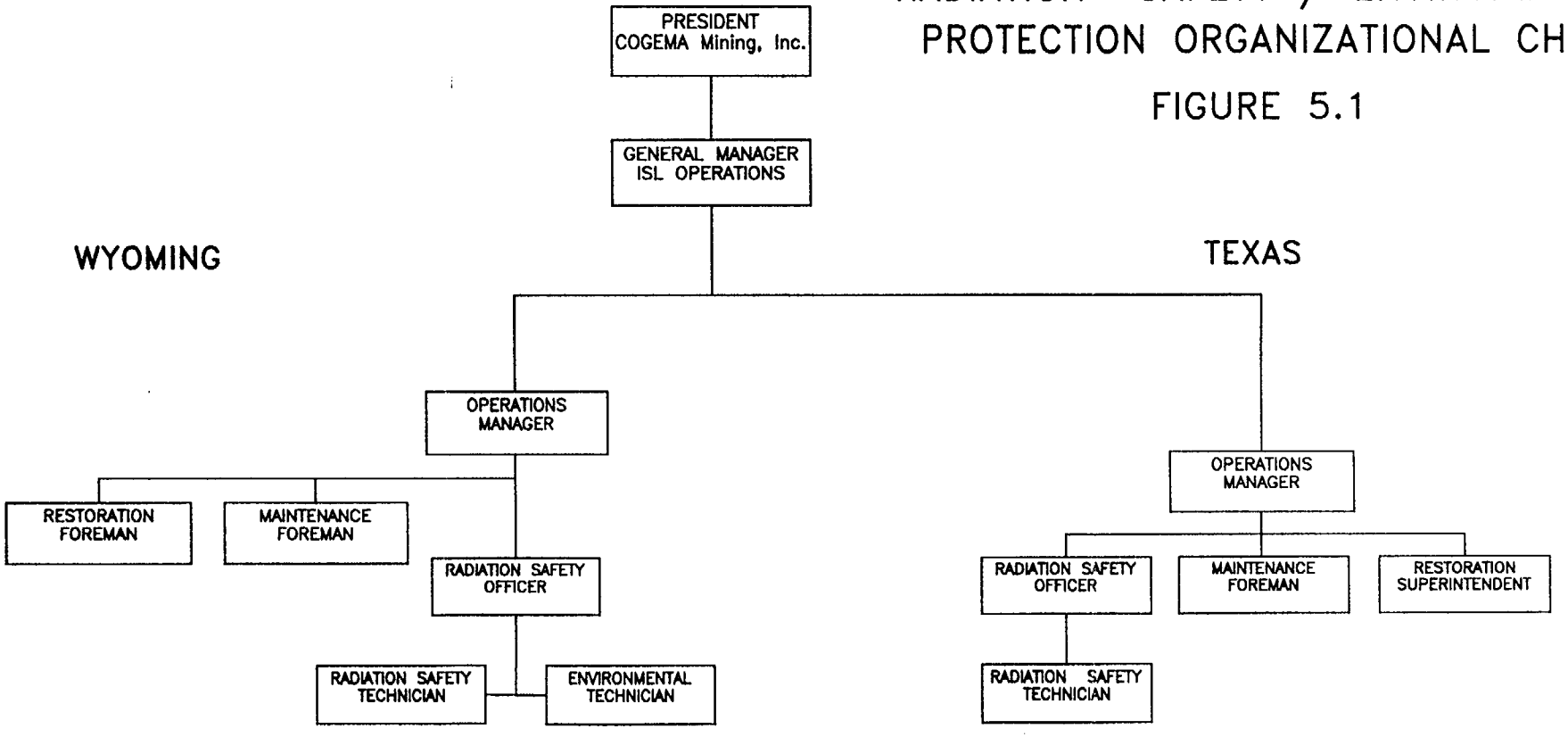
SATELLITE PLANT GENERAL ARRANGEMENT DIAGRAM

GEOLOGY:		STATE: WYOMING COUNTY: JOHNSON
ENVIRON: J. Vaselin		DATE: SEPTEMBER 1995
SURVEY:		SCALE: See Scalebar REVISED: 2-NOV-01
DATA PROC: Penny Hague		MAP ID: Figure 3.11

COGEMA Mining, Inc.

RADIATION SAFETY / ENVIRONMENTAL PROTECTION ORGANIZATIONAL CHART

FIGURE 5.1



Revised 1/20/2001

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5.1.2 OPERATIONS MANAGER

The Operations Manager is responsible for all operational aspects of the Irigaray and Christensen Ranch Sites. These aspects include the development, review and implementation of all operating procedures and implementation of safety programs, associated quality assurance programs and routine and non-routine maintenance activities. The Operations Manager is also responsible for adherence to all regulatory license conditions, stipulations and regulations. The Operations Manager has the authority to terminate immediately any or all portion(s) of the project that have been determined to be a threat to health or environment as indicated from the Radiation Safety Officer or Radiation Safety Technician. These positions, in addition to the Restoration Foremen and Maintenance Foreman, report directly to the Operations Manager. The Operations Manager reports to the General Manager. ◂R5 ▾ ▾ ▴ ◂R6 ◂R5

5.1.3 RADIATION SAFETY OFFICER

The Radiation Safety Officer (RSO) has direct responsibility for the development, review, approval, implementation and adherence to radiation safety programs, industrial safety programs, environmental monitoring programs and associated quality assurance programs for the Irigaray and Christensen Ranch Sites. The RSO is responsible for the maintenance of all operational licenses and permits for continued mine operations including modifications, amendments and renewals. ◂R5 ◂R5 ◂R5 ◂ ◂R5

The RSO is also responsible for the collection and interpretation of all safety and environmental monitoring data, and the proper recording and reporting of such. The RSO conducts routine training programs for the supervisors and employees with regard to the proper application of radiation protection and industrial safety procedures. This individual is also responsible for the implementation of and adherence to all regulatory license requirements and fulfillment of reporting requirements. The RSO, with assistance from the RST or other qualified designee, personally inspects facilities to verify compliance with all applicable health physics and radiation safety requirements. The RSO has both the responsibility and authority to suspend, postpone or modify any work activity that is unsafe or potentially a violation of USNRC's regulations or license conditions, including the ALARA program. The RSO reports directly to the Operations Manager. ◂R6 ◂R5

5.1.4 RADIATION SAFETY TECHNICIAN (RST)

The Radiation Safety Technician (RST) assists the RSO with his routine radiation safety surveys, employee exposure records keeping, facility inspections, training, and industrial safety responsibilities. The RST reports directly to the RSO.

(R1 Revision, 09-03-97)
(R5 Revision, 06-13-00)
(R6 Revision, 01-04-01)

5.1.5 (Section Deleted) ◂R6

5.1.6 RADIATION SAFETY AUDITOR

COGEMA Mining, Inc. utilizes either the General Manager or an outside radiation protection auditing service to provide assurance that all radiation health protection procedures and license condition requirements are being conducted properly at the Irigaray and Christensen Ranch Sites. Any outside service used for this purpose is qualified in radiation safety procedures as well as environmental aspects of solution mining operations. ◂R5

5.2 MANAGEMENT CONTROL PROGRAM

5.2.1 OPERATING PROCEDURES

Written standard operating procedures (SOPs) have been developed for all process activities, including those activities involving radioactive materials, for both the Irigaray and Christensen Ranch facilities. Where radioactive materials handling is involved, pertinent radiation safety practices are incorporated into the SOP. Additionally, written SOPs have been developed for non-process activities including environmental monitoring, health physics procedures, emergency procedures, and general safety. Written SOPs have been developed, reviewed and approved by the appropriate supervisors and the RSO. All written SOPs are reviewed for radiological protection aspects and approved by the RSO prior to operations. Additionally, the RSO reviews all SOPs on an annual basis. Applicable current SOPs are referenced throughout this document. SOPs are revised as necessary to meet changing operational and regulatory requirements. Any revisions made to the SOPs are reviewed and approved by the RSO and appropriate supervisor prior to implementation. Written SOPs are kept in the areas of the plant facility where they are used by employees. ◂R5

For the performance of non-routine work or maintenance activities where the potential for radiation exposure exists and for which written operating procedures have not been prepared, a radiation work permit (RWP) is required. The RWP specifies the necessary radiological safety precautions, equipment or specialized clothing, and radiological surveys required for performing the job. RWPs are issued by the RSO or his designee by way of specialized training.

(R5 Revision, 06-13-00)
(R6 Revision, 01-04-01)

rate. As the RO unit has proven to be efficient at removing approximately 95% of all ions, additional

uranium and radium-226 removal is not thought to be necessary. Wellfield flow rates during the RO/permeate injection phase will again vary based upon aquifer properties, but are expected to range from 200 to 500 gpm depending upon the size of the area undergoing restoration.

Operation of the RO unit requires chemical additions before and after processing. Prior to processing, antiscalants such as sodium hexametaphosphate or polycarboxylic acid are required to prevent fouling of the RO membranes. Additionally, pH control is required prior to the RO unit (sulfuric acid is added to create an acidic condition for processing), and after processing to raise the pH to baseline wellfield pH levels (addition of sodium hydroxide). Other additions to the permeate will consist of the addition of reducing chemicals or the use of another heavy metal precipitant such as polythiocarbonate, if necessary (allowed for pilot use only in the Irigaray well fields). As the pH control of the injected permeate and metals reduction are key elements for the success of the restoration program, these will be discussed in more detail following. R7

Control of Permeate Injection pH

In some mine units, the baseline groundwater pH approaches 9.0 standard units. In order to achieve this baseline value, adjustment of the permeate pH level prior to injection must be accomplished. The permeate to be used for injection will be decarbonated in a stripping column to reduce the concentration of dissolved carbon dioxide in solution and raise the pH. Sodium hydroxide (caustic soda) will be used to adjust the pH of the permeate stream to a pH of up to 9.5 prior to injection. The higher pH level for the permeate will not only bring the groundwater back to the baseline pH range, but could also in itself create a more reducing environment underground for chemical precipitation. R7 R7 R7 R7

Metals Reduction

Probably the most important step of the restoration process is to return the underground conditions to baseline, which includes the oxidation/reduction state. If the aquifer is left highly oxidized (which occurs during mining), metals and other constituents will continue to leach and remain at higher than desired levels during and after restoration. Accordingly, it is necessary to attempt to reduce the oxygenated environment as much as possible during restoration, which entails the addition of reducing agents such as listed below during the permeate injection phase. R7

Hydrogen Sulfide	H_2S	R7
Sodium Sulfide	Na_2S	R7
Sodium Bisulfite	$NaHSO_3$	R7
Sodium Metabisulfite	$Na_2S_2O_5$	R7
Sodium Dithionate	$Na_2S_2O_4$	R7
Sodium Sulfite	Na_2SO_3	R7

The addition of an oxygen scavenger, or reducing agent, will occur after the first PVD of permeate injection. In the case of Irigaray Units 4 through 9, approximately 44,000 pounds of hydrogen sulfide (H_2S) gas are planned to be injected into Units 4 through 9 during the second PVD of RO/permeate injection. The basis for the 44,000 pounds is previous field experience in Irigaray Units 1 through 3, where approximately half this amount was used (one truck load). The concentration will be adjusted to approximately 200 mg/l in the permeate stream, until clear breakthrough of the gas is seen in the recovery wells. Injection of the H_2S will continue until Eh (oxidation potential) or dissolved oxygen readings indicate that the oxidation potential has been reduced.

In mine units at Christensen Ranch or future units at Irigaray, the amount of chemical reducing agents applied will ultimately be dependent upon the Eh of the wellfield at the time of the addition. R7 R7

The H_2S gas will be delivered to the site in an insulated tanker trailer. The liquid H_2S will be extracted from the bottom of the tank and vaporized in a series of stainless steel coils submerged in water. The vaporized H_2S will be metered and injected into the permeate stream flowing into the wellfield. The gas generates sufficient pressure as it vaporizes to overcome injection line pressure; however, a series of controls will be installed in the H_2S line that will shut the system down in the event of pressure/flow losses in the permeate stream, or the detection of a pre-determined concentration of the gas in the wellfield or plant areas.

In April, 1991, a hydrogen sulfide safety program was submitted to the WDEQ and NRC for the Units 1 through 5 approved restoration plan. The program was approved by NRC through Condition No. 38 of SUA-1341. The same safety plan will be followed for the restoration program, with the exception that the particular brand of detection equipment identified in the plan may not be available. However, equivalent equipment will be used. Standard operating procedures will be developed according to the April, 1991 plan, and as new technology dictates.

It is anticipated that all metals will be reduced to baseline levels or target restoration values through the use of the H_2S gas. However, in the remote case that this does not occur, the addition of a heavy metal precipitant may be necessary. The heavy metals precipitant proposed for use in the Irigaray 4 through 9 program (only if necessary) during the permeate stream is "Thio-Red II", a liquid organo-sulfur polymer (polythiocarbonate). Thio-Red II has no hazardous ingredients or breakdown products; its affinity for heavy metals is a characteristic of the polythiocarbonate, which will not react with other cations. The product is used by industry for heavy metals recovery from underground waters, waste oils, general wastewater treatment operations, and is used as a polishing agent for removing heavy metals for effluent discharge compliance.

Bench scale testing of the Thio-Red II product was conducted at the Irigaray laboratory in 1990. No adverse reactions were noted either during introduction to lixiviant or permeate. However, when WDEQ and NRC approved the restoration plan for Units 1 through 5, the use of Thio-Red II was restricted to the southern half of Mine Unit 1. Prior to full-scale utilization of the precipitant, a report describing the test and results was to be submitted to NRC and WDEQ