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Part A 3A-1

FREEPORT-MCMORAN COPPER & GOLD

Freeport-McMoRan Sierrita Inc.
6200 W. Duval Mine Rd.
PO Box 527
Green Valley, Arizona 85622-0527

August 3, 2010

Via Certified Mail # 7009 0820 0000 0231 3081
Return Receipt Requested

Mr. John Schofield
Mailcode: WST-3
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Re: Freeport-McMoRan Sierrita Inc. Response to Warning Letter and Request for Information

Dear Mr. Schofield:

Freeport-McMoRan Sierrita Inc. (Sierrita) received the U.S. Environmental Protection Agency (EPA or Agency) Warning Letter and Request for Information Pursuant to Section 3007(a) of the Resource Conservation and Recovery Act (the "Warning Letter") via Certified Mail on July 6, 2010. A copy of the RCRA Compliance Evaluation Inspection Report (the "Inspection Report") for the August 11-12, 2009 inspection conducted by EPA and the Arizona Department of Environmental Quality (ADEQ) was included with the Warning Letter and identifies potential violations. The Warning Letter requests documentation of correction of the potential violations (within 30 days of receipt of the Warning Letter), and requests additional information (within 45 days of receipt of the Warning Letter). This letter responds to the Warning Letter and includes documentation of correction of all remaining areas of potential violations identified in the Inspection Report. Sierrita is preparing responses to EPA's requests for additional information and, as recently discussed with you, will be in contact with you if additional time is necessary to provide any of the requested information.

I. The "Site Description and Process Information" and "Facility Inspection" Sections of the Inspection Report

The Inspection Report includes a section entitled "Site Description and Process Information". This section contains several inaccurate descriptions. We have included as Attachment 1 our suggested edits to this section to accurately convey the Sierrita process.

Further, in the section entitled "Facility Inspection," there are several instances where EPA mischaracterizes valuable process solutions as "wastes" and, in our opinion, improperly analyzes the RCRA status of the streams in light of these mischaracterizations. In addition, the Inspection Report provides a "traditional" analysis of the RCRA regulatory status of these valuable streams without recognition of the Agency's authority being limited to the regulation of "discarded" materials. *American Mining Congress v. EPA,* 824 F.2d 1177, 1190 (D.C. Cir. 1987) (hereinafter "*AMC I*").

The primary copper and molybdenum industries reuse a number of materials generated within their processes to ensure the maximum recovery of any and all target metals contained in such

resource materials that were produced as a result of the extraction, beneficiation or processing of ores and minerals. As noted by the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) when evaluating whether certain materials generated and reused within these industries were outside of EPA's jurisdiction:

> Extractive metallurgy proceeds incrementally. Rome was not built in a day, and all metal cannot be extracted in one fell swoop. In consequence, materials are reprocessed in order to remove as much of the pure metal as possible from the natural ore.

AMC I, 824 F.2d at 1181. As such, the D.C. Circuit concluded:

> In sum, our analysis of the statute reveals clear Congressional intent to extend EPA's authority only to materials that are truly discarded, disposed of, thrown away, or abandoned [and] [t]hese materials have not yet become part of the waste disposal problem; rather they are destined for beneficial reuse or recycling in a continuous process by the generating industry itself.

Id. at 1190.

In addition, we note that even though the D.C. Circuit issued its decision in *Association of Battery Recyclers v.* EPA, 208 F.3d 1047 (D.C. Cir. 2000) (hereinafter "*ABR*"), over 10 years ago, the Inspection Report fails to include an evaluation of whether any of the solutions generated and reused at Sierrita are "in-process secondary materials" that are not "discarded." Such materials are not subject to RCRA in the first instance because "[r]ather than throwing these materials away, the producer saves them; rather than abandoning them, the producer reuses them." *ABR*, 208 F.3d at 1051.

By analogy, any production operation or process unit that receives or enhances the recovery of the naturally-occurring metals found in the natural ores extracted by the industry is never engaged in waste-management or "reclamation" of "discarded" secondary materials, but is engaged in the fundamental "production" of these natural minerals from the natural ores. As long as a material produced from a primary metals operation still contains recoverable natural minerals originating from the natural ore feedstock, the further processing of that material either in a beneficiation or mineral processing operation is part of the fundamental "production" process as recognized by the D.C. Circuit. *See AMC I,* 842 F.2d at 1181. The only reason why all recoverable natural minerals cannot be "produced" by a single process is due to the limitations of technology. However, the fact that multiple sequential processes are technologically necessary to maximize the recovery of natural minerals from natural ores does not make those natural minerals – whose recovery has been simply delayed temporarily due to technological constraints – "discarded" materials subject to regulation as solid and hazardous wastes.

Also included as Attachment 1 are our comments on the "Facility Inspection" section of the Inspection Report.

II. <u>The Lime Scrubber Bleed Stream</u>

A significant error in both sections is EPA's statement that the lime scrubber bleed from the lime scrubbers in the molybdenum roasting process is directed to the Moly Decant Pond. The effluent

from the lime scrubber flows into a weir tank and from there to a lime slurry tank. At the lime slurry tank, fresh lime is added and the solution is pumped back to the scrubber. A portion of the lime solution, prior to introduction into the scrubber, is routed to the Mill tailing launder (referred to as the lime scrubber bleed). The Mill tailings launder routes to the Tailings Thickeners.

Process equipment associated with the scrubbers measures pH at the weir tank. The normal pH range at this location is approximately 5.0 – 11.0. The pH of 12.5 measured by EPA (sample SP-03) is due to the addition of virgin lime to the lime slurry tanks to (1) ensure a proper pH solution for introduction into the lime scrubbers, (2) facilitate separation of the tailings from the water for reuse of the water in the Mill circuit, and (3) condition the water returned to the Mill to depress pyrites and facilitate recovery of the target metals.

The lime scrubber bleed, which is rich in caustic value, provides a beneficial use in the Tailings Thickeners as a commercial chemical product substitute for lime (*see* 40 C.F.R. § 261.2(e)(1)(ii)). The lime scrubber bleed is added in the Tailings Thickeners to raise the pH of the Mill tailings to an optimal range of pH 8-9, which facilitates the separation of the tailings from the water contained therein for placement of the tailings in the Tailings Impoundment and recovery and reuse of the water in the Mill circuit. Further, the lime scrubber bleed is a commercial chemical product substitute for lime that is regularly added to water in the Mill flotation circuit to depress pyrites and facilitate the separation of the copper from the ore. Sierrita believes that the misconception regarding the routing of the lime scrubber bleed may have led EPA to a larger misconception of the purpose and intent of the Moly Decant Pond.

Consistent with the above description, we have corrected the lime scrubber bleed routing in both the "Site Description and Process Information" and "Facility Inspection" sections of the Inspection Report included as Attachment 1.

III. Potential Violations Noted in the Inspection Report

Provided below are the potential violations identified in the Investigation Report followed by Sierrita's responses:

Potential Violations of Arizona Administrative Code Title 18 and RCRA 40 CFR Hazardous Waste Management Regulations

1. Hazardous Waste Accumulation Container Management

   Finding: An open full 5-gallon container of discarded D001 adhesives was observed in the Central Accumulation Building.

   Facility Response: As described in the Investigation Report, facility personnel corrected this potential violation on August 11, 2009.

2. Accumulation Start Date Marking

   Finding: A five-gallon container of discarded D001 adhesives was labeled. However, the accumulation start-date was missing.

Facility Response: As described in the Investigation Report, this potential violation was corrected on August 11, 2009. As noted during the inspection, the five-gallon container consisted of several cans of ignitable hazardous waste (D001) adhesive that were individually wrapped in plastic bags. Each plastic bag was labeled with the name of the contents and the accumulation start date. However, as noted above, the five-gallon container used to consolidate these bags of adhesive was not labeled with the accumulation start date.

3. Waste Determination

Finding: A five-gallon bucket of unknown material or waste was observed outside the north end of the Salvage Storage Yard.

Facility Response: The contents of the container, located within the contractor's area, were identified and determined to still be usable. As such, the container was labeled and moved to the contractor's chemical storage area where it could be used. The material in the container was EXCEL Medium Duty Cutting Oil 304. Because information on this container was not requested at the close-out meeting held at Sierrita at the end of the inspection, Sierrita did not previously submit information on this container to EPA. The MSDS for this product is enclosed in Attachment 2.

4. Contingency Plan

Finding: FM Sierrita's contingency plan was missing the required equipment capabilities and item description.

Facility Response: As described in the Investigation Report, Sierrita submitted documentation that the potential violation had been corrected and that a revised contingency plan had been submitted to local emergency response agencies.

5. Emergency Coordinator Training

Finding: FM Sierrita Emergency Coordinators (ECs) had not received the required hazardous waste management training specific to their duties.

Facility Response: Sierrita maintains that the ECs received the appropriate hazardous waste management training specific to their duties. Documentation that the ECs received training on the Sierrita Hazardous Waste Contingency Plan, however, was not available. As described in the Investigation Report, Sierrita submitted documentation that the designated ECs received training on the Contingency Plan to the EPA.

Follow-up Information: The Investigation Report requested that Sierrita provide the following Personnel Training Plan information for primary and secondary ECs located at the facility:

- EC Job Title and Job Description
- EC Initial Training Requirements
- EC Annual Training Requirements

Facility Response: 40 C.F.R. § 262.34(a)(4) states that the hazardous waste generator must comply with the requirements for owners or operators in 40 C.F.R. § 265.16. This

requirement is limited to employees involved in the management of hazardous waste. This interpretation is supported by 40 C.F.R. § 265.16(d)(1), which requires: "The job title for each position at the facility ***related to hazardous waste management***, and the name of the employee filling each job" (emphasis added).

Sierrita's primary and alternate ECs are responsible for managing the facility-wide Emergency Response Team. These ECs are not responsible for day-to-day hazardous waste management, are not involved in the management of hazardous waste at the facility, nor do they perform work at the hazardous waste Central Accumulation Area. Because the ECs are not involved in hazardous waste management, they are not subject to the training requirements at 40 C.F.R. § 265.16. They are however, expected to satisfy the requirements for emergency coordinators set forth at 40 C.F.R. § 265.55 which provides:

> At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.

The Sierrita ECs were selected based on their responsibility as facility Incident Commanders who are responsible for coordinating all emergency response measures. The Sierrita ECs receive training in emergency response, spill response and site evacuation procedures. In addition, as described above, the Sierrita ECs receive training on the Sierrita Hazardous Waste Contingency Plan.

In accordance with the foregoing, Sierrita does not believe that the information requested for Sierrita's ECs is required however the requested Hazardous Waste Training Plan which includes the EC initial and refresher training requirements and the EC Job Title and Job Description are included in Attachment 3.

Potential Violations of Arizona Revised Statutes Title 49 and RCRA 40 CFR Used Oil Management Regulations

1. Used Oil Management

Finding: Free liquid used oil was observed in a small plastic bucket that had been disposed in a roll-off container. The roll-off container was located outside the Mine/Cat Shop. FM Sierrita signage outside the dumpster stated that no free liquids were to be placed in the roll-off container.

Facility Response: The small plastic bucket identified above was removed from the roll-off immediately by the area supervisor, in the presence of the inspectors. The material in the container was identified as grease which had melted in the summer heat and become liquid. The roll-off container was a lined, 40-yard roll-off container designated for petroleum-contaminated debris. As described above, signage is provided on the container stating "No

Dripping or Free-Flowing Liquids". In addition, facility personnel receive initial and annual environmental refresher training which includes proper management of petroleum-contaminated debris.

Should you have any questions regarding the above, please contact me at (520) 648-8700.

Sincerely,

Chad D Fretz

Chad Fretz
Manager, Environment, Land and Water

CDF:sbk

Attachments
20100803_001

cc: Van Housman, EPA Certified Mail 7009 0820 0000 0231 3098
Mel Bunkers, ADEQ Certified Mail 7003 0820 0000 0231 3111
Mike Redmond, PDEQ Certified Mail 7009 0820 0000 0231 3128

Certification of Compliance

I certify that the areas of noncompliance identified above have been corrected as described in this response.

08/03/10

John D. Broderick
Vice President and General Manager

Date

ATTACHMENT 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

WASTE MANAGEMENT DIVISION
RCRA ENFORCEMENT OFFICE
RCRA COMPLIANCE EVALUATION INSPECTION REPORT

Purpose:	RCRA Compliance Evaluation Inspection
Facility:	Freeport-McMoRan Sierrita, Inc.
Location:	6200 West Duval Mine Road Green Valley, Arizona 85614
Mailing Address:	P. O. Box 527 Green Valley, Arizona 85622
EPA ID Number:	AZD982478216
Date of Inspection:	August 11 and 12, 2009
EPA Representatives:	John Schofield Region 9, RCRA Compliance Office (415) 972-3386 schofield.john@epa.gov Van Housman, Office of Enforcement and Compliance Assurance, EPA Headquarters
Arizona Department of Environmental Quality Representatives:	Mel Bunkers Manager Hazardous Waste Inspections and Compliance Unit (602) 771-4556 Bunkers.Mel@azdeq.gov Pamela R. Nicola Compliance Officer Hazardous Waste Inspections and Compliance Unit

	Aleksandra L. Argals Compliance Officer Hazardous Waste Inspections and Compliance Unit
Pima County Department of Environmental Quality Representatives:	Mike Redmond Hazardous Materials Specialist (520) 740-3358 mredmond@deq.co.pima.az.us
Facility Representatives:	Chad Fretz Manager Environmental, Land & Water (520) 648-8700 chadfretz@fmi.com
	Martha Mottley Chief Environmental Engineer
	Sherry Burt-Kested Senior Environmental Engineer
	Lana Fretz Manager – Corporate Waste Programs
	Steve Feltman Superintendent – Moly Operation
Report Date:	June 29, 2010
Prepared by:	John Schofield and Van Housman

Introduction

On August 11 and 12, 2009 representatives of the U.S. Environmental Protection Agency (EPA), Arizona Department of Environmental Quality (ADEQ), and Pima County Department of Environmental Quality (PDEQ) conducted an unannounced concurrent compliance evaluation inspection (CEI) of the Freeport-McMoRan Sierrita, Inc. (FMSierrita, Sierrita, or facility) at Green Valley, Arizona. The purpose of the inspection was to determine FM-Sierrita's compliance with applicable federal environmental statutes and regulations, and in particular, the Resource Conservation and Recovery Act (RCRA), as amended, the regulations provided in the Code of Federal Regulations (CFR), Chapter 40, Parts 261-265, 268, 273, and 279, and the State of Arizona's authorized hazardous waste program in the Arizona Revised Statutes, Title 49 and the Arizona Administrative Code (AAC) Title 18, Chapter 8, Article 2.

The inspectors conducted a physical inspection of the facility and reviewed records related to FM-Sierrita's hazardous waste management practices. This inspection report summarizes the events that transpired during the inspection and observations made by the inspectors.

Facility Background

Facility Name	Freeport-McMoRan Sierrita, Inc., a wholly-owned subsidiary of Freeport-McMoRan Copper & Gold, Inc.
Company Web-Site	http://www.fcx.com/operations/USAArizonaSierrita.htm
Site History	Open pit mining at the Sierrita Mine began operations in 1957. Phelps Dodge Corporation (Phelps Dodge) acquired the mine in 1999. Freeport-McMoRan Copper & Gold, Inc. completed its acquisition of Phelps Dodge, including the Sierrita operations, in 2007.
Number of Employees	Approximately 1,000 employees
Hours of Operation	24 hour, 7 days per week, 365 days per year. First shift starts at 6:00 a.m.
Filed Notification of Hazardous Waste Activity	July 12, 1999
Facility Processes	FM-Sierrita operates an open pit copper mine, and copper, molybdenum, and rhenium processing facilities. A more detailed description of the facility processes are discussed below.
Wastes Streams	Used oil, spent solvents (e.g., acetone, paint thinners, methyl ethyl ketone), paint wastes, aerosol cans, maintenance related wastes (e.g., adhesives, cleaners), spent filters, and universal wastes (e.g., batteries, mercury lamps, and fluorescent lamps).
Generator Status	Large Quantity Generator (LQG)
Compliance History	Two prior CEI's of the facility have been performed. On October 15, 1998, a CEI was performed by the PDEQ. Four unspecified violations were identified. On March 19, 2007, PDEQ performed a CEI. No violations were observed by the agency representative.

Site Description and Process Information

FM-Sierrita consists of three open pits, a concentrator, one~~two~~ molybdenum roasting plant~~s~~ with

two roasters, ~~a ferromolybdenum chemical plant,~~ a rhenium chemical plant, an oxide and low grade sulfide dump leaching operation~~s~~, and a copper sulfate plant (Attachment 1 and aerial photograph below). Ore mined at the facility contains an average concentration of approximately 0.23 percent (0.23%) copper and 0.030% molybdenum.

Copper concentrates, copper cathode, copper-sulfate pentahydrate, molybdenum sulfide and molybdenum oxide are the primary products produced at the facility. Rhenium, a rare metal, is also produced at the facility.

The copper/molybdenum ores are milled to reduce the particle size of the ore. The ground ore undergoes copper/molybdenum flotation which separates the copper/molybdenum from the host rock or "gangue minerals." The separated host rock reports to the Tailings Thickeners in slurry form where (1) the density is increased by partially removing water from the matrix through settling and addition of a lime scrubber bleed stream from the roasters, and (2) water is recovered and reintroduced into the Mill circuit, prior to deposition of the solids (referred to as "tailings") at the Sierrita Tailings Impoundment. Final separation and concentration of the copper and molybdenum ores occur in the molybdenum flotation circuit. The final copper

concentrate is ~~dried~~ dewatered using vacuum disk filters prior to staging at the copper concentrate loading area before shipment to the Freeport-McMoRan Miami, Inc. copper smelter located at Claypool, Arizona for further processing.

The molybdenum (moly) concentrate generated at FM-Sierrita and ~~shipped~~concentrates received from other off-site sources (e.g., Cerro Verde and other toll manufacturers~~Freeport-McMoRan Bagdad, Inc., Bagdad, Arizona~~) is processed into molybdenum oxide at the FM-Sierrita facility. Sierrita recovers copper and removes i~~I~~mpurities (e.g., ~~copper and~~ lead sulfide) contained in the moly concentrate ~~must be removed~~ prior to roasting using a hot ferric chloride leach process in a tank-based operation. After the copper and impurities have been removed, the moly-~~-~~containing material, in the form of molybdenum disulfide (MoS_2), is dried and then stored prior to roasting. The molybdenum disulfide is roasted in one of two roasters, converting the MoS_2 to molybdenum trioxide (MoO_3). The roaster off-gas containing sulfur dioxide is passed through an electrostatic precipitator (ESP) then through a lime scrubber with an associated mist eliminator and then is exhausted through a stack.

The effluent from the lime scrubber associated with each roaster flows into a weir tank and from there to a lime slurry tank. At the lime slurry tank, fresh lime is added and the solution is pumped back to the scrubber. A portion of the lime solution (referred to as the lime scrubber bleed), prior to introduction into the scrubber, is routed to the Mill tailings launder. The Mill tailings launder routes to the Tailings Thickeners where the lime values are used as a commercial chemical product substitute for lime to facilitate the separation of the host rock from the water contained therein for placement of the partially-dewatered tailings in the Tailings Impoundment and recovery and reuse of the water in the Mill circuit. The lime scrubber bleed is also used as a commercial chemical product substitute for lime that is regularly added to water in the Mill floatation circuit to facilitate the depression of pyrites and the separation of copper from the ore. The higher density tailings from the Mill Tailings Thickeners reports to the Sierrita Tailings Impoundment where the lime-conditioned water is decanted and returned to the Mill circuit for reuse.

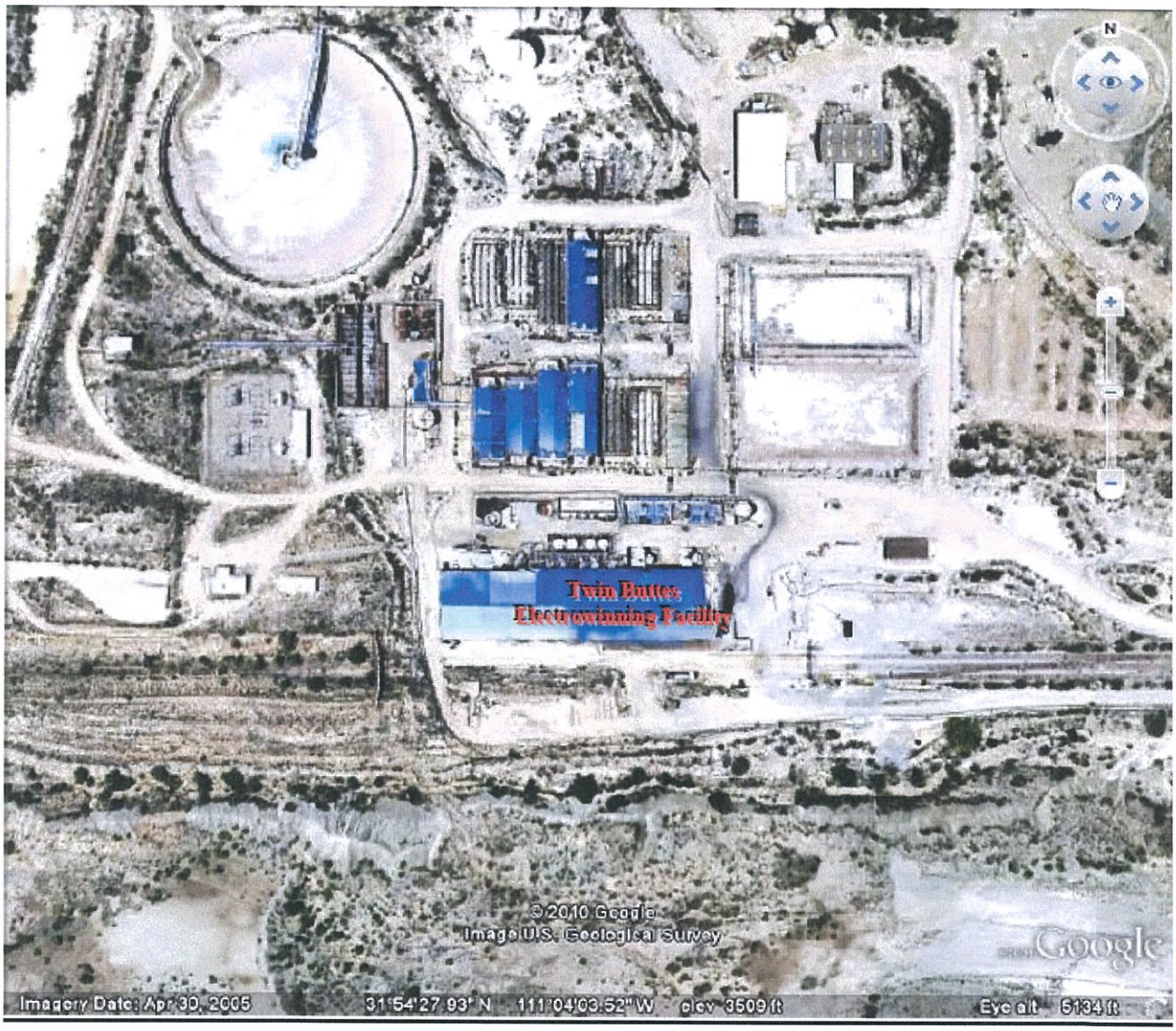
The leached thickener overflow that contains the ~~from the~~ ferric chloride leach solution is ~~combined with other process wastes (e.g., lime scrubber bleed) then~~ discharged to the Moly Decant Pond. At the Moly Decant Pond the ~~combined process and waste streams~~acidic and copper-bearing, leached thickener overflow solution is ~~are mixed~~ pumped to the Active Leach Area where, along with the ~~with~~ barren leach solution called raffinate from the copper solution extraction (SX)/electrowinning (EW) plants, ~~This mixture~~ is then applied to the copper ~~dump~~ leach ~~pads~~stockpiles for copper recovery ~~(also known as the Active Leach Area)~~.

The off gases from the moly roasters also contain rhenium (Re) oxide (Re_2O_7). Re is condensed, collected, scrubbed, and concentrated via solution~~vent~~ extraction and ion exchange (Attachment 2). ~~Additional concentration of the Re is performed using ammonium perchlorate and hydrogen reduction. The product is scrubbed with a caustic solution as final refinement process.~~ Some process ~~wastes~~ solutions [e.g., Re SX~~solvent extraction~~ raffinate (barren solution)] generated during the Re SX~~refinement~~ process are mixed with ~~moly process wastes~~the leached thickener overflow due to their copper and acid content and discharged to

the Moly Decant Pond.

Low grade sulfide and oxide copper ores and ~~process wastes~~materials with recoverable copper resulting from beneficiation activities (e.g., SX plant "crud"~~e~~) are placed in the Active Leach Area. Raffinate [diluted sulfuric acid resulting from beneficiation activities and copper-bearing and ~~process wastes~~acidic solutions (e.g., Moly Decant Pond ~~wastewaters~~solutions from the leached thickener overflow)] are applied to the Active Leach Area. The resulting leachate (pregnant leach solution or PLS) is collected and piped to the ~~Solvent Extraction (~~SX~~)~~ plant~~s~~. At the SX plant~~s~~ the PLS is mixed with ~~solvent~~ organic (~~diesel~~ kerosene range petroleum product) ~~and additives~~ that removes the copper from the PLS. After the solution has been stripped of copper, the barren solution (raffinate) is returned to the Active Leach Area via the raffinate ponds. Sulfuric acid is then used to strip the copper-bearing organic of copper (resulting in electrolyte and stripped organic). The copper-bearing electrolyte is sent to the Twin Buttes EW plant. The stripped organic is returned to the SX plants for re-use. Residual amounts of organic are carried by the raffinate to the raffinate ponds. This organic is removed from the raffinate ponds and filtered through clay to remove the copper and other solids from the organic solution. The organic is sent back to the SX plants for reuse. The clay used to filter the organic is called "crud." "Crud," consisting of solids, residual organic, ~~petroleum as diesel, and/or debris generated from the SX plant~~and high amounts of recoverable copper, is collected and placed onto the Active Leach Area for copper recovery.

~~The copper-laden solvent is processed (transferring the copper in the solvent to an electrolyte). The barren solvent is recycled back into the SX process. The copper-laden electrolyte is piped to~~At the ~~electrowinning~~ EW plant, ~~located at the off-site Twin Buttes facility where~~ the copper is plated onto copper starter sheets~~steel cathodes~~ (see aerial photograph Page 6). ~~Lead~~ A lead metal alloy is used as the anode and ~~becomes spent as~~ lead flake is generated from the deposition of the "consumed" lead alloy electrode in the EW cells. This material is cleaned out of the cells when the cells are shut down for routine maintenance. ~~The barren electrolyte is returned back to the SX plant area.~~ Lead flake generated during the ~~electrowinning~~ EW process is placed in plastic 55-gallon containers. The containers are kept open to allow the wet material to air dry. Filled containers of lead flake are shipped to the Doe Run secondary lead smelter located at Boss~~Bixby~~, Missouri ~~where the lead is reclaimed~~for recovery of the lead values. The barren electrolyte is returned back to the SX plant.



Hazardous wastes, universal wastes, and used oil are generated at the facility. Hazardous wastes are accumulated in satellite accumulation containers located throughout the facility (Attachment 3). Full satellite accumulation containers are transferred to the less than 90-day accumulation area located at the Central Accumulation Building. The wastes are held in the Central Accumulation Building until shipped off-site to a permitted Treatment/Storage/Disposal (TSD) facility.

Other operations at FM-Sierrita facility include, but are not limited to:

- truck maintenance
- small vehicle maintenance
- laboratories (moly and rhenium)
- plant maintenance
- SX shop
- equipment parts and other materials (some of which are hazardous materials)

warehousing
- hazardous and non-hazardous waste accumulation

Facility Inspection

The facility inspection did not include facilities associated with the copper and molybdenum flotation circuits.

Additionally to performing a walk-through inspection and records review, the EPA inspectors obtained waste samples. **[Sierrita Comment: None of the streams sampled are "wastes." They are either (1) valuable in-process solutions/materials resulting from, and facilitating, the incremental extraction of the target metals, or (2) in the case of lead flake recycled off-site, neither a solid waste nor a hazardous waste due to the lead values contained therein being reclaimed. As such, none of the sampled streams are "discarded." *See American Mining Congress v. EPA*, 824 F.2d 1177, 1181, 1190 (D.C. Cir. 1987) (hereinafter "*AMC* I"), *Association of Battery Recyclers v. EPA*, 208 F.3d 1047, 1051 (D.C. Cir. 2000) (hereinafter "*ABR*"); 40 C.F.R. § 261.2, Table 2 (for the lead flake).]** The EPA inspectors determined the number, location, and type of samples during the walk-through portion of the CEI. Sample collection and processing was performed under the supervision of EPA. EPA's contractor, Eastern Research Group (ERG), assisted the EPA with waste sampling and data collection. Split samples obtained by the EPA were provided to FM-Sierrita. FM-Sierrita was responsible for storing and transporting split samples to their selected analytical laboratory. Sample collection and analyses was performed in accordance with the procedures described in Attachment 4 of this report.

The following FM-Sierrita areas were inspected and/or sampled:

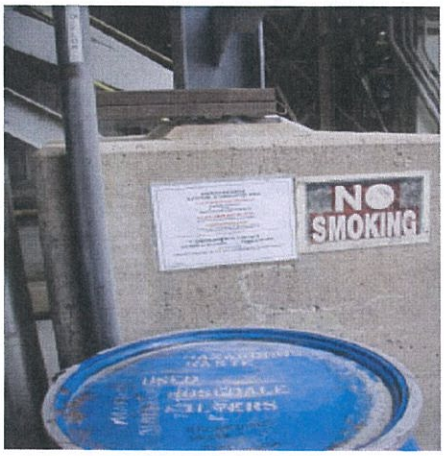
1. Moly Processing Area;
2. Rhenium Processing Area;
3. Moly Decant Pond;
4. Central Storage Building;
5. Salvage Storage Yard;
6. Mill Lab/Core Analytical Building;
7. Warehouse;
8. Mine Truck/Cat Shops;
9. Twin Buttes Electrowinning Facility;
10. Small Vehicle Maintenance, and
11. SX Plant.

1. Moly Processing Area

The ~~molybdnenum~~molybdenum concentrate (molybdenum sulfide) generated at the facility and obtained from other ore processing operations (Cerro Verde and other toll manufacturers~~Freeport-McMoRan Bagdad, Inc.~~) undergoes chemical processing to make a molybdenum trioxide product. **[Sierrita Comment: The roasting of molybdenum**

concentrate to produce molybdenum trioxide is mineral processing, not chemical processing. *See Technical Background Document: Identification and Description of Mineral Processing Sectors and Waste Streams*, pgs. 488 - 490 (April 1998) (hereinafter the "*Identification* Document")] Heated ferric chloride solution is used to digest and remove copper and impurities from the molybdenum concentrate. The leached molybdenum sulfide is then routed to a thickener to rinse and increase the density of the molybdenum sulfide. The~~to generate a~~ leached thickener overflow, which is mixed with other waste streams, is routed to the Moly Decant Pond before being applied to the Active Heap Leach Area (see Page 5 above for discussion of heap leach processing). The leached thickener overflow exhibits the hazardous characteristic for both lead and chromium. **[Sierrita Comment: No waste streams are routed to the leached thickener overflow or Active Heap Leach Area. EPA's analytical result for the ferric chloride leach solution (sample SP-04) shows 62,000 mg/l copper and the analytical result for the Moly Leached Thickener Overflow (SP-01) shows 520 mg/l copper. By comparison, Sierrita's typical copper concentration in the barren raffinate from the SX plants that is applied to the Active Heap Leach Area is 20 mg/l copper. As such, neither the ferric chloride solution nor the Moly Leached Thickener Overflow is "discarded," rather they are valuable in-process solutions recirculated to recover the target metals due to technological limitations in the recovery process and to use the acid values contained therein in the incremental metals recovery process. *See AMC I* 824 F.2d at 1181, 1190, *ABR*, 208 F.3d at 1051. Further, the ferric chloride solution and the Moly Leached Thickener Overflow are effective substitutes for sulfuric acid in the leaching process and because they are substitutes for a commercial chemical product (sulfuric acid) that is normally applied to the land, both streams are neither solid nor hazardous waste. 40 C.F.R. § 261.2(c)(1)(ii); *see by analogy* EPA Inspection Report for the Freeport-McMoRan Miami Inc. (formerly the Phelps Dodge Miami, Inc.) facility, pgs. 17-20 (April 2002), EPA Inspection Report for the ASARCO Inc. Hayden facility, pgs. 7-10 (April 2002). Finally, even if considered a waste, because the ferric chloride is used for leaching in a tank prior to roasting, it is, at most, a beneficiation solid waste. 40 C.F.R. § 261.4(b)(7)(i).]**

Photograph Number	Description	Photograph
1-1	Stitched panoramic photograph of Moly Processing Area.	

Photograph Number	Description	Photograph
1-2	Satellite accumulation area located within Moly Processing Area. Signage states: 1. only one container per wastes stream, 2. maximum of 55- gallon of waste accumulated at point, and 3. satellite accumulation container must be kept closed except when adding or removing wastes from the container.	
1-3	Moly Processing Area. Satellite accumulation containers. Containers are marked and labeled, as required. No potential violations were observed at this hazardous waste satellite accumulation point.	

Moly Leached Thickener Overflow

On August 11, 2009, a sample of the Moly Leached Thickener Overflow (MLTO) was obtained (SP-01, Attachment 4[1]). The liquid sample was analyzed for toxic characteristic leaching procedure (TCLP) metals, total metals, and pH.

The results of the sample analyses are summarized below in the following table:

Sample ID	TCLP[2] Cr	TCLP Pb	Total[3] Cu	Total Cr	pH
SP-01	**14***	**17***	520	13	2.3

***Bold** = Sample exhibits characteristics of a RCRA hazardous waste (D007; D008).

Based on the analytical results listed above, the MLTO is characteristically-hazardous for

[1] Attachment 4 of this report is a draft copy of the Analytical Results Memorandum prepared by Eastern Research Group (ERG) for the FM-Sierrita facility. The report provides a description of the samples obtained at FM-Sierrita, the sample preservation methods, analytical procedures, and results of all the analyses performed.
[2] TCLP metal concentration reported as milligrams per liter (mg/L).
[3] Total metal concentration of liquid sample reported as mg/L.

chromium and lead, and is acidic. Application of the characteristically-hazardous overflow to the Active Heap Leach Area may be a use constituting disposal. Materials used in a manner constituting disposal are solid wastes even if the wastes are legitimately recycled (40 CFR § 261.2(2)(e)(1), and Column 1 of Table 1 in 40 CFR § 261.2). Hazardous wastes that are recycled are "recyclable materials" (40 CFR § 261.6(a)(1)). Recyclable materials used in a manner constituting disposal are required to comply with 40 CFR § 266.20. 40 CFR § 266.20 requires the recyclable material to meet the applicable Land Disposal Restrictions (LDRs) prior to placement on the land. The characteristically-hazardous MLTO does not meet the treatment standards for chromium and lead.

The major concern with the application of the MLTO to the Active Heap Leach Area is whether or not the application of the overflow is legitimate recycling. Under 40 CFR § 261.2(c)(1)(ii) commercial chemical products are legitimately recycled if applied to the land, and that is the product(s) ordinary manner of use. Normal feedstocks for heap leaching are water, acid (primarily sulfuric acid), and ore. The MLTO appears to be used as a substitute for sulfuric acid normally purchased by FM-Sierrita for application to the Active Heap Leach Area.[4]

Criteria which EPA has stated that must be considered when determining legitimacy of recycling are:

- whether there are "toxics along for the ride;"
- low amounts of recoverable materials plus presence of non-contributing hazardous constituents in the waste;
- whether the material is being speculatively accumulated, and/or
- the recycled material or waste provides an "useful contribution" to the recycling process.[5]

There appears to be no other identified sources of the chromium and lead contained in the MLTO other than the ore. The MLTO would appear to contribute to the acid value of the raffinate that will be applied to the Active Heap Leach Area. The MLTO does not appear to be speculatively accumulated.

Additional information regarding the MLTO is required in order to determine if the material is being legitimately recycled. Additionally, mass-balances of the ~~the~~ non-contributing, characteristically-hazardous metals observed in the MLTO and other process/waste streams must be developed and obtained to verify that the source(s) of the chromium and lead observed in the MLTO is from the ore. **[Sierrita Comment: The MLTO is not a "waste." EPA's analytical result for this stream (sample SP-01) shows 520 mg/l copper. By comparison, Sierrita's typical copper concentration in the barren raffinate from the SX plants that is applied to the Active Heap Leach Area is 20 mg/l copper. As such, the MLTO is not**

[4] Sulfuric acid purchased by FM-Sierrita is manufactured at the Freeport-McMoRan-Miami, Inc., Sulfuric Acid Plant.

[5] See 50 *Federal Register* (FR) 638 (1/4/85), 52 FR 17013 (5/6/87), 53 FR 522 (1/8/88), 63 FR 28587 (5/26/1998), and 73 FR 64701-64710 for examples of recycling legitimacy criteria.

"discarded," rather it is a valuable in-process solution recirculated to recover the target metals due to technological limitations in the recovery process and to use the acid values contained therein in the incremental metals recovery process. *See AMC I*, 824 F.2d at 1181, 1190, *ABR*, 208 F.3d at 1051. Further, the MLTO effluent is an effective substitute for sulfuric acid in the leaching process and because it is a substitute for a commercial chemical product (sulfuric acid) that is normally applied to the land, it is not a solid waste. 40 C.F.R. § 261.2(c)(1)(ii); *see by analogy* EPA Inspection Report for the Freeport-McMoRan Miami Inc. (formerly the Phelps Dodge Miami, Inc.) facility, pgs. 17-20 (April 2002), EPA Inspection Report for the ASARCO Inc. Hayden facility, pgs. 7-10 (April 2002). Sierrita will separately respond to EPA's request for information regarding the MLTO.]

Lime Scrubber Bleed

Sulfur dioxide from the molybdenum roaster is scrubbed using lime. Bleed from the lime scrubber is wasted to the Moly Decant Pond. On August 11, 2009, a sample of the Lime Scrubber Bleed (LSB) was obtained (SP-03). The liquid sample was analyzed for TCLP metals, total metals, and pH.

The results of the sample analyses are summarized below in the following table:

Sample ID	TCLP Cr	TCLP Pb	Total Cu	Total Cr	pH
SP-03	BDL	BDL	BDL	BDL	**12.5***

***Bold** = Sample exhibits characteristics of a RCRA hazardous waste (D002).
BDL = Below Detection Limits.

The LSB is mixed with acidic process (i.e., undergoes neutralization) and hazardous wastes at the Moly Decant Pond, and is ultimately applied to the Active Heap Leach Area. Elementary neutralization of corrosive-only hazardous waste is exempted from RCRA permitting requirements provided that the neutralization is performed in a container or tank (elementary neutralization unit[66]), as defined in 40 CFR § 260.10. If LSB is treated in a tank, the tank is not required to meet 40 CFR § 265 Subpart J requirements.

Based on the limited analytical data developed for the LSB, it does not appear that this waste stream would exceed any of the LDR Universal Treatment Standards listed in 40 CFR § 268.48 (Attachment 4).

Other than for neutralizing and disposal, the analytical data developed indicates that there is no benefit of mixing the LSB with the other process and hazardous wastes. The LSB appears to be a strong base. Strong acidic solutions are required to be applied to the Active Heap Leach Area in order to extract copper from the ore. EPA requires additional information regarding the LSB in order to determine why FM-Sierrita discharges this waste stream to the Moly Decant

[6] Mixing corrosive-only hazardous wastes with TCLP or TCLP/corrosive wastes to neutralize the waste would not meet the definition of elementary neutralization (40 CFR § 270.2).

Pond. **[Sierrita Comment: The LSB is not a "waste." As reflected in the "Site Description and Process Information Section," the effluent from the lime scrubber flows into a weir tank and from there to a lime slurry tank. At the lime slurry tank, fresh lime is added and the solution is pumped back to the scrubber. A portion of the lime solution, prior to introduction into the scrubber, is routed to the Mill tailings launder (referred to as the lime scrubber bleed). The Mill tailings launder routes to the Tailings Thickeners.**

Process equipment associated with the scrubbers measures pH at the weir tank. The normal pH range at this location is approximately 5.0 – 11.0. The pH of 12.5 measured by EPA (sample SP-03) is due to the addition of virgin lime to the lime slurry tanks to (1) ensure a proper pH solution for introduction into the lime scrubbers, (2) facilitate separation of the tailings from the water for reuse of the water in the Mill circuit, and (3) condition the water returned to the Mill to depress pyrites.

The lime scrubber bleed, which is rich in caustic value, provides a beneficial use in the Tailings Thickeners as a commercial chemical product substitute for lime (*see* 40 C.F.R. § 261.2(e)(1)(ii)). The lime scrubber bleed is added in the Tailings Thickeners to raise the pH of the Mill tailings to an optimal range of pH 8-9, which facilitates the separation of the tailings from the water contained therein for placement of the tailings in the Tailings Impoundment and recovery and reuse of the water in the Mill circuit. Further, the lime scrubber bleed is a commercial chemical product substitute for lime that is regularly added to the water destined for the Mill circuit to depress pyrites and facilitate the separation of the copper from the ore in the Mill flotation process.]

2. Rhenium Processing Area

On August 11, 2009, two process/waste samples were obtained from this area:
1. Rhenium Solvent Extraction Raffinate (SP-02) and 2. Ferric Solution Leach Bleed (SP-04). **[Sierrita Comment: Neither the Rhenium SX Raffinate nor the Ferric Solution Leach Bleed are "wastes." The ferric chloride leach bleed should be discussed in the "Moly Processing Area" section of the Report as this is where the leaching occurs.]** The liquid samples were analyzed for TCLP metals, total metals, and pH.

The results of the sample analyses are summarized below in the following table:

Sample ID	TCLP As	TCLP Cr	TCLP Pb	TCLP Se	pH
SP-02	**9***	**10***	**6***	**3.3***	**0.8***
SP-04	BDL	BDL	4.2	BDL	**<0***

***Bold** = Sample exhibits characteristics of a RCRA hazardous waste (D002, D004, D007, D008, and/or D010).
BDL = Below Detection Limits.

Rhenium Solvent Extraction Raffinate (SP-02)

As with the Moly Leached Thickener Overflow, the process which generates the Rhenium Solvent Extraction Raffinate (RSER) mineral processing waste is not listed in 40 CFR §§ 261.4(b)(7)(ii).

Therefore, any mineral processing wastes generated from this process, which are characteristically-hazardous, may be subject to RCRA hazardous waste management requirements. The RSER is discharged along with other waste and process streams to the Moly Decant Pond. As previously stated, the effluent from the Moly Decant Pond is eventually applied to the Active Heap Leach Area.

Based on the analytical results listed in the above table, the RSER (SP-02) is characteristically-hazardous for arsenic, chromium, lead, and selenium, and is corrosive. The RSER process/waste stream is managed in the same manner as the MLTO process/waste stream: 1. used as a product substitute for sulfuric acid and 2. is not speculatively accumulated. The question whether or not the observed use of the RSER process/waste stream is being "legitimately recycled" cannot be fully answered until further information regarding the RSER and other process/waste streams is obtained (See MLTO discussion Pages 9 and 10 above). **[Sierrita Comment: The Rhenium SX raffinate is not a "waste." EPA's analytical result for this stream (sample SP-02) shows 330 mg/l copper and the analytical result for the Moly Leached Thickener Overflow (SP-01) shows 520 mg/l copper. By comparison, Sierrita's typical copper concentration in the barren raffinate from the SX plants that is applied to the Active Heap Leach Area is 20 mg/l copper. As such, neither the Rhenium SX Raffinate nor the Moly Leached Thickener Overflow is "discarded," rather they are valuable in-process solutions recirculated to recover the target metals due to technological limitations in the recovery process and to use the acid values contained therein in the incremental metals recovery process. *See AMC I*, 824 F.2d at 1181, 1190, *ABR* 208 F.3d at 1051. Further, the Rhenium SX Raffinate and the Moly Leached Thickener Overflow are effective substitutes for sulfuric acid in the leaching process and because they are substitutes for a commercial chemical product (sulfuric acid) that is normally applied to the land, they are not a solid waste. 40 C.F.R. § 261.2(c)(1)(ii); *see by analogy* EPA Inspection Report for the Freeport-McMoRan Miami Inc. (formerly the Phelps Dodge Miami, Inc.) facility, pgs. 17-20 (April 2002), EPA Inspection Report for the ASARCO Inc. Hayden facility, pgs. 7-10 (April 2002).]**

Ferric Solution Leach Bleed (SP-04)

The source of the Ferric Solution Leach Bleed (FSLB) is not a mineral processing operation that is listed in 40 CFR §§ 261.4(b)(7)(ii). Therefore, any mineral processing wastes generated from this process, which are characteristically-hazardous, may be subject to RCRA hazardous waste management requirements. The FSLB is discharged along with other waste and process streams to the Moly Decant Pond. As previously stated, the effluent from the Moly Decant Pond is eventually applied to the Active Heap Leach Area.

Based on the analytical results listed in the above table, the FLSB (SP-04) is characteristically-hazardous due to the low pH value (D002, corrosive). The RSER process/waste stream is managed in the same manner as the MLTO process/waste stream: 1. used as a product substitute for sulfuric acid and 2. is not speculatively accumulated. There does not appear to be any significant "toxics along for the ride" observed in the process/waste stream. **[Sierrita Comment: Please see the discussion under the "Moly Processing Area" regarding this**

stream and why, at most, it is a solid, but not a hazardous, waste.]

3. Moly Decant Pond

The Moly Decant Pond is a concrete constructed basin that receives various waste and process streams from the Moly and Rhenium process areas, and probably from other areas of the facility. The waste and process streams are mixed in the basin prior to being pumped to a raffinate pond. **[Sierrita Comment: No wastes are discharged into the Moly Decant Pond, only valuable in-process solutions containing recoverable copper and acid values beneficial to the leaching process and part of the incremental metallurgy process. See *AMC I*, 824 F.2d at 1181, 1190, *ABR*, 208 F.3d at 1051. The Moly Decant Pond only receives solutions from the Molybdenum and Rhenium areas.]**

On August 11, 2009, a liquid sample from the Moly Decant Pond was obtained and analyzed for TCLP metals, total metals, and pH. The results of the sample analyses are summarized below in the following table:

Sample ID	TCLP Cr	TCLP Pb	Total Cu	Total Cr	pH
SP-05	**15***	**18***	510	16	2.1

***Bold** = Sample exhibits characteristics of a RCRA hazardous waste (D007 and D008).
BDL = Below Detection Limits.

As previously stated, the waste and process waters identified on Pages 9 through 12 above are not derived from any mineral processing operation that is listed in 40 CFR §§ 261.4(b)(7)(ii). Additional waste and process waters may be discharged to the basin.

Due to the fact the Moly Decant Pond mixture waste and process waters contained in the basin is not derived from any exempt processes, the combined waste and process water may be subject to RCRA hazardous waste management requirements. Based on the analytical results listed in the above table, in the Moly Decant Pond the mixture of waste and process streams (SP-05) is characteristically-hazardous for chromium and lead, and is acidic.

The analytical results of the Moly Decant Pond mixture of hazardous and process wastes indicate that treatment of characteristically-hazardous mixture is occurring in the basin (i.e., pH reduction). Additionally, dilution of the characteristically-hazardous waste and process streams is occurring in the basin. For example the Rhenium Solvent Extraction Raffinate stream fails the TCLP for arsenic and selenium, and has a total arsenic and selenium concentration of 8.7 and 3.4 mg/L, respectively. The Moly Decant Pond mixture does not fail TCLP for arsenic and selenium. The total arsenic and lead concentrations observed in the Moly Decant Pond hazardous and process waste are 1.0 and 0.10 mg/L, respectively. Dilution of hazardous wastes to meet a concentration-based treatment standard(s) prior to land disposal is prohibited by 40 CFR § 268.3.

Sludge accumulated in the Moly Decant Pond may not be exempt from RCRA if the sludge exhibits a RCRA characteristic (see 40 CFR §§ 261.21, 261.22, 261.23 and/or 261.24).

Additionally, the effluent prior to being land applied may be required to meet LDR treatment standards (see 40 CFR §§ 268.40 and 268.48). Additional process and waste information is required in order to determine applicability of LDR treatment standards to the Moly Decant Pond effluent.

The Moly Decant Pond is a concrete basin (Attachment 4, Photograph No. 7). There was insufficient information obtained during the CEI to determine if the Moly Decant Pond is tank or a surface impoundment. The "parking lot" test would be required to be performed by FM-Sierrita in order to determine if the Moly Decant Pond is a tank or surface impoundment (Attachment 5). **[Sierrita Comment: EPA's analytical result for this stream (sample SP-05) shows 510 mg/l copper. By comparison, Sierrita's typical copper concentration in the barren raffinate from the SX plants that is applied to the Active Heap Leach Area is 20 mg/l copper. As such, the liquid from the Moly Decant Pond is not "discarded," rather it is a valuable in-process solution recirculated to recover the target metals due to technological limitations in the recovery process and to use the acid values contained therein in the incremental metals recovery process. *See AMC I*, 824 F.2d at 1181, 1190, *ABR*, 208 F.3d at 1051. Further, the Moly Decant Pond liquid is an effective substitute for sulfuric acid in the leaching process and because it is a substitute for a commercial chemical product (sulfuric acid) that is normally applied to the land, it is not a solid waste. 40 C.F.R. § 261.2(c)(1)(ii); *see by analogy* EPA Inspection Report for the Freeport-McMoRan Miami Inc. (formerly the Phelps Dodge Miami, Inc.) facility, pgs. 17-20 (April 2002), EPA Inspection Report for the ASARCO Inc. Hayden facility, pgs. 7-10 (April 2002). Regarding the solids from the Moly Decant Pond, Sierrita collected a sample of this stream during the most recent clean-out and the solids had 51.2% molybdenum. By comparison, the molybdenum in Sierrita's ore grade is 0.03% molybdenum. The Moly Decant Pond solids are introduced in the molybdenum roaster to recover the molybdenum values contained therein. As such, they are an in-process material that is not "discarded" via placement in the Active Heap Leach Area. *See AMC I*, 824 F.2d at 1181, 1190, *ABR*, 208 F.3d at 1051. Sierrita will separately respond to EPA's request for information regarding the Moly Decant Pond.]**

4. Central Accumulation Building

A secure metal-framed and metal exterior building is used to accumulate hazardous and non-hazardous wastes. The building interior is composed of storage bays constructed of concrete blocks on a concrete slab. The purpose of the bays is to separate and accumulate wastes by waste types (e.g., corrosive). This arrangement is performed to ensure that incompatible wastes are not stored together.

Full hazardous and non-hazardous waste satellite accumulation containers are transferred to the Central Accumulation Building prior to transport to an off-site, permitted TSD facility. Additionally, smaller quantities of hazardous wastes are transported to the Central Accumulation Area were the wastes are segregated by waste type (e.g., corrosive). Once sufficient quantities of hazardous wastes are accumulated, the smaller containers are bulked or consolidated into lab-pack containers.

Universal wastes are accumulated in a secure area located outside the Central Accumulation Building.

Photograph Number	Description	Photograph
4-1	Universal waste batteries are segregated by battery type (e.g., lead-acid) and placed in the appropriate marked container. No issues of concern were identified for the universal waste battery accumulation area.	
4-2	Wastes such as the paints and two part epoxies pictured in the photograph are transferred to the Central Accumulation Building. The material is placed on a pallet outside the building prior to being classified and transferred into the Central Accumulation Building.	
4-3	Inside the Central Accumulation Building. One of the bays used to accumulate hazardous wastes. Note: concrete floor is in good condition with no significant cracks or staining.	
4-4	Interior view of the Central Accumulation Building. Note: concrete floor is in good condition with no significant cracks or staining.	

Photograph Number	Description	Photograph
4-5	Open full container of discarded D001 adhesives. The accumulation start date had not been placed on the container label.	
4-6	Label of container pictured in Photograph 4-5 above. The lid to the container is missing (i.e., open container) and the accumulation start date is missing from the container label.	

5. Salvage Storage Yard

The Salvage Storage Yard is a chain-linked fenced in area where mostly discarded equipment and materials are stored.

Photograph Number	Description	Photograph
5-1	Outside the fence, north side of the Salvage Storage Yard, a five-gallon pail of unknown material was observed. The container label has faded and peeled away apparently from being stored outside.	

FM-Sierrita representatives stated that a contractor had left the containerized material at the site. **[Sierrita Comment: As noted in Sierrita's response to the Warning Letter that**

accompanied the Inspection Report, the container was present within the contractor's area. The container contents were identified and determined to still be usable. As such, the container was labeled and moved to the contractor's chemical storage area where it could be used.] Reportedly, contractor agreements with FM Sierrita require the contractor to be responsible for any hazardous materials brought onto the site by the contractor.

6. Mill Lab/Core Analytical Building

Laboratory rinse waters are discharged to a neutralization sump. Treated sump water is piped to a holding tank known as the Neutralization Tank. The collected treated water is used as a process water in the Mill Plant. On August 12, 2009, a solid sample from the sump (SP-05) and a liquid sample from Neutralization Tank (SP-07) were obtained. The samples were analyzed for TCLP metals, total metals, TCLP semi-volatile organic compounds (SVOCs), and total SVOCs, polychlorinated biphenyls (PCBs), congeners and pH.

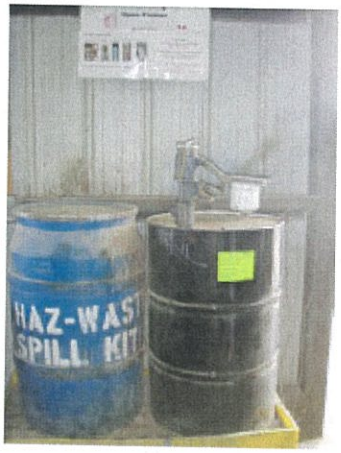
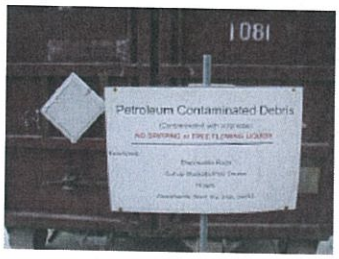
No issues of concern were identified in the analytical results (Attachment 4). Additionally, no issues of concern were identified for satellite accumulation containers located in each of the laboratories.

7. Warehouse

No issues of concern were identified in the warehouse used to store equipment parts and hazardous materials.

8. Mine Truck/Cat Shops

Large pieces of equipment are maintained by FM Sierrita. Routine preventative maintenance as well as equipment repairs is performed at the Mine Truck/Cat Shops facility. The largest waste stream by volume generated at this location is used oil. The used oil is collected in two large aboveground storage tanks. Oily waste and debris (e.g., oil contaminated floor dry, rags, etc.) are accumulated in a 20 to 40 yard cubic container. Spent coolant generated by the facility is also accumulated in an aboveground storage tank.

Photograph Number	Description	Photograph
8-1	Satellite accumulation point located at the Cat Shop area. The container to the right is equipped with an aerosol can puncturing device. A canister used collect any vapors from the can puncturing process is also connected to the container. The closed container is in good condition and is marked and labeled, as required. No significant free liquids were observed within the secondary containment pallet below the satellite accumulation container.	
8-2	Used oil accumulation tanks. Tanks are marked and labeled, as required. No significant liquid accumulation was observed within the secondary containment area. Note: Tanks are included in the facility's Spill Prevention, Control, and Countermeasures Plan (SPCC).	
8-3	Contents of 20 to 40 cubic-yard roll-off container used to accumulate oily debris. Free liquid was observed in the orange bucket pictured in the middle of the photograph.	
8-4	Signage posted outside oily debris accumulation container. Note that free liquids are not to be disposed in the roll-off container.	

9. Twin Buttes Electrowinning Facility

The Twin Buttes Electrowinning Facility is located approximately 4 miles northeast of the FM-

Sierrita facility. Pregnant Leach Solution from FM-Sierrita is piped to the electrowinning facility. The copper is plated onto lead anodes. As a result of plating copper onto the steel cathodes, lead flake is formed (see also Page 5 for further description of the copper plating process). The lead flake generated at the Twin Buttes electrowinning facility is collected in 55-gallon plastic containers.

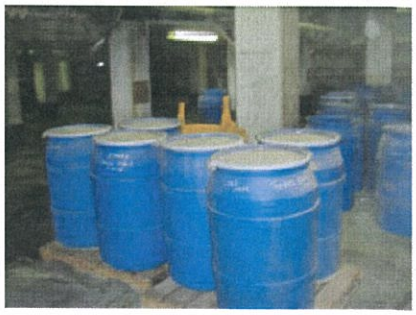
Approximately 20 containers of lead flake were observed underneath the electrowinning area. Approximately half of the containers were closed and the other half of the containers were open.

Samples from three lead flake containers were obtained and analyzed for TCLP metals and total metals. The results are summarized below:

Sample ID	Total Pb[7]	TCLP Pb	Total Cu	Total As	TCLP As	Total Se	TCLP Se
SP-08	39,000	**19***	23,000	56	BDL	< 2.5	BDL
SP-09	55,000	**20***	5,300	100	BDL	< 5.0	BDL
SP-10	63,000	**9***	6,500	91	BDL	< 5.0	BDL

***Bold** = Sample exhibits characteristics of a RCRA hazardous waste (D008).
BDL = Below Detection Limits.

The accumulated lead flake is shipped to the Doe Run secondary lead smelter located at Bixby, Missouri where the lead is reclaimed. **[Sierrita Comment: Electrowinning is specifically identified by EPA as a beneficiation activity. 40 C.F.R. § 261.4(b)(7)(i). As such, the lead flake is, at most, a solid, but not a hazardous, waste. Applying a "traditional" RCRA analysis to the lead flake, because it is sent to Doe Run for reclamation, it would be a "by-product" that is "reclaimed" without "speculative accumulation" occurring. Thus, it would neither be a solid nor a hazardous waste. 40 C.F.R. § 261.2, Table 1.]**

Photograph Number	Description	Photograph
9-1	Containerized lead flake located at the Twin Buttes Electrowinning Facility. Electrowinning operations are located on the floor above.	

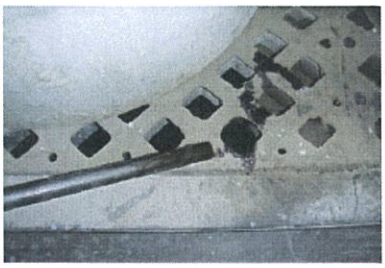
[7] Total metals for solid samples reported as milligrams per kilogram (mg/kg).

Photograph Number	Description	Photograph
9-2	Contents of one of the lead flake containers.	
9-3	Contents of one of the lead flake containers. Note: General solid waste is being accumulated in the container.	
9-4	Pipe lines which carry pregnant solution from the SX Plant to the electrowinning facility and return "spent" solution back to the SX Plant.	

General trash was observed in several of the lead flake accumulation containers. FM Sierrita should initiate procedures to ensure that only lead flake that can be reclaimed at the Doe Run facility is accumulated in the containers.

10. Small Vehicle Maintenance Building

A small vehicle (e.g., pick-up trucks) maintenance building is located at FM-Sierrita. Used oil, coolant, and solvent wastes are generated at this location.

Photograph Number	Description	Photograph
10-1	Satellite accumulation area for the Small Vehicle Maintenance Building. No issues of concern were identified for any of the aerosol, used coolant, and scrap metal satellite accumulation containers observed. All containers were properly labeled.	
10-2	The secondary containment pallets pictured in Photograph 10-1 above contained approximately 4 inches accumulated oil and water. Any accumulated liquids in secondary containment pallets should be removed as soon as practical.	
10-3	The approximately 350-gallon tank pictured is used to accumulate used oil. The tank is marked and labeled, as required. Secondary containment did not contain any appreciable quantities of accumulated liquids.	

11. SX Plant

A satellite accumulation point is located at the SX Plant maintenance shop. No issues of concern were identified for the satellite accumulation container.

A clay based waste is generated at the SX Plant. The waste referred to as "crud" is collected in a bin. Once the bin is filled, the crud is removed and applied to Active Leach Heap Area.

On August 12, 2009, a sample of the "crud" was obtained (SP-11). The sample was analyzed for TCLP metals, total metals, TCLP SVOCs, and SVOCs. No issues of concern were identified in the analytical results. The total copper concentration contained in the crud was 1,700 mg/kg. **[Sierrita Comment: Solvent (solution) extraction is specifically identified by EPA as a beneficiation activity. 40 C.F.R. § 261.4(b)(7)(i), *Identification Document*, pg. 248. As such, the crud is, at most, a solid waste, but not a hazardous waste. However, as noted by EPA, the total copper concentration in the crud is 1,700 mg/kg, whereas the average copper concentration in Sierrita's oxide ore is 1,900 mg/kg (0.19%) copper. As such, because of the incremental nature of extractive metallurgy, the copper-bearing crud is an in-process material that is neither a solid nor a hazardous waste . *See AMC I*, 824 F.2d at 1181, 1190, *ABR*, 208 F.3d at 1051.]**

Photograph Number	Description	Photograph
11-1	Bin is used to accumulate "crud."	
11-2	Contents of "crud" bin pictured in Photograph 11-1 above.	

Record Review

Record	Year(s)	Potential Violations
Manifests	2007 to August 2009	None
Land Disposal Restriction (LDR) Notifications	2007 to August 2009	None
Biennial Report	2007	None
Contingency Plan	Not Applicable	FM-Sierrita's contingency plan lacked the descriptions and capabilities of each piece of emergency response equipment. AAC R18-8-262.A; AAC R18-8-265.A (40 CFR §§ 262.34(a)(4); 265.52(e).
Inspection checklists	2007 to August 2009	None
Training Records and Documentation	Not Applicable	Emergency coordinators identified in the contingency plan had not been trained to the contingency plan. AAC R18-8-262.A; AAC R18-8-265.A (40 CFR §§ 262.34(a)(4); 265.16(a)(1); 265.16(a)(3).

[Sierrita Comment: As noted in Sierrita's response to the Warning Letter that accompanied the Inspection Report, Sierrita maintains that the Emergency Coordinators (ECs) received appropriate training specific to their duties. Documentation that the ECs received training on the Sierrita Hazardous Waste Contingency Plan, however, was not available at the time of the inspection. As noted in the section of the Inspection Report entitled "Post Inspection," Sierrita submitted documentation to EPA that the ECs received training in the Contingency Plan.] The primary and secondary emergency coordinators (ECs) for the facility reside in FM Sierrita's Safety Department. Any emergency response activities

at the facility will involve multiple departments. The ECs will coordinate emergency response actions (e.g., hazardous waste spills) that involve one or more FM-Sierrita departments. For a hazardous waste emergency response action, the ECs will ensure that the necessary company resources are committed and the contingency plan is implemented. Appropriately trained FM-Sierrita environmental and safety staff will to the hazardous waste emergency response action.

Per 40 CFR § 265.16 (incorporated by reference ACC R18-8-265.A), the ECs require training to ensure that the individuals are familiar with the contingency plan, and with the company's capabilities to response to a hazardous waste emergency response action. During the CEI, FM Sierrita representatives were not able to demonstrate that the designated ECs had been properly trained.

The following Training Plan related information was not obtained for the ECs during the CEI:

- EC Job Description
- EC Initial Training Requirements
- EC Annual Training Requirements

[Sierrita Comment: As discussed in Sierrita's response to the Warning Letter that accompanied the Inspection Report, Sierrita does not believe that the information requested for Sierrita's ECs is required, however, this information is attached to Sierrita's response.]

Post-Inspection

On January 13, 2010, Mr. Chad Fretz, Manager-Environment, Land & Water, FM-Sierrita submitted the following documentation/information to the EPA:

- Documentation that the revised Contingency Plan was sent to be required agencies.
- List of equipment capabilities in the Contingency Plan.
- Documentation that the Emergency Coordinators have received Contingency Plan training.
- Martha Mottley's RCRA training certificate.

Attachment 6 contains copies of the submitted documentation/information.

ATTACHMENT 2

"Protects like no other"
1601 McCloskey Boulevard
Hookers Point - Tampa, Florida 33605-6710 U.S.A.
E-MAIL: info@xcellube.com
www.xcellube.com
Telephone: (813) 248-1988 Facsimile: (813) 241-9533

MATERIAL SAFETY DATA SHEETS

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

GENERIC NAME: Cutting Oil **ISSUE DATE:** MAR 2006

THIS MSDS REPRESENTS THE FOLLOWING XCEL PRODUCTS:

TRADE NAMES:
1. Xcel Medium Duty Cutting Oil 304

CAS NUMBER: Mixture
SYNONYMS / GENERAL NAMES: Lubricating Oil
24 HOUR EMERGENCY TELEPHONE: (CHEMTREC) 1-800-424-9300
TECHNICAL INFORMATION: 813-248-1988

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	%	HAZARD DATA
Highly Refined Mineral Base Oils	64742-55-8	>80	64742-55-8 (LD_{50} 9rat): > 5 g/kg Health effects are based upon similar materials.
Petroleum Sulfonates	Mixture	<20	Dermal and Eye: Irritant
EWS Oils	Mixture	<05	

HAZARDOUS INGREDIENTS: None
CAS NUMBER: Mixture
HAZARDOUS PER 29 CFR 1916.1200: None

3. HAZARDOUS IDENTIFICATION

ROUTES OF ENTRY: Inhalation of incidental fumes or vapors.
IRRITANCY: NA
REPRODUCTIVE EFFECTS: NA
CANCER INFORMATION: NA

4. FIRST AID MEASURES

EYES:	Flush with large volumes of water. Seek physician if pain, excessive tearing or irritation persists.
DERMAL:	Wash with soap and water. Do not wear heavily contaminated clothing. Launder contaminated clothing before reuse. Seek medical attention if tissue damage or irritation persists.
INGESTION:	Do not induce vomiting. If spontaneous vomiting is about to occur, place victim's head below knees. Seek medical attention immediately.
INJECTION:	Injection under the skin, in muscle or into the blood stream is a medical emergency. Seek medical attention immediately.
INHALATION:	Move victim to fresh air. If victim is not breathing, immediately begin cardiopulmonary resuscitation (CPR). If breathing is difficult, 100% humidified oxygen should be administered by a qualified individual. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

FLASH POINT, °C(°F): 210°C (410°F)
FLAMMABLE LIMITS (% BY VOLUME IN AIR): **LOWER:** NA **UPPER:** NA
EXTINGUISHING MEDIA: CO_2, Dry chemical, foam, water fog
SPECIAL FIRE FIGHTING PROCEDURES: None
NFPA RATING: **HEALTH:** 1 **FLAMMABILITY:** 1 **REACTIVITY:** 0

NA - NOT APPLICABLE ND - NO DATA NE – NOT ESTABLISHED

6. ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES: Remove all ignition sources. Isolate the area of the spill and restrict access to persons wearing protective clothing. Ventilate area of release, as necessary, to disperse vapors and mists.

7. STORAGE

STORAGE PROCEDURES: Store in a cool, dry, well ventilated area. Do not apply heat or flame to container. Keep separate from strong oxidizing agents.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:	Use in a well ventilated area. In confined space, mechanical ventilation may be required to keep levels of certain components below applicable workplace exposure levels by designated and properly trained personnel.
GLOVES PROTECTION:	Use gloves constructed of impervious materials such as neoprene or heavy nitrile rubber if frequent or prolonged contact is expected.
EYE PROTECTION:	Safety glasses. Safety goggles, or chemical splash goggles if splashing is anticipated.
RESPIRATORY PROTECTION:	At elevated temperatures, vapor or mist concentrations may exceed applicable workplace exposure levels. Use a NIOSH or MSHA approved organic vapor/mist chemical cartridge when elevated airborne concentrations are anticipated.
CLOTHING RECOMMENDATION:	Wear body-covering work clothes to avoid prolonged or repeated exposure. Launder contaminated work clothes before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Amber liquid
ODOR:	Mild petroleum odor
pH:	NA
VAPOR PRESSURE:	NA
VAPOR DENSITY:	NA
MELTING POINT:	NA
BOILING POINT °C (°F):	270-332 (520-630)
SOLUBILITY IN WATER:	Negligible
GRAVITY:	31.56
EVAPORATION RATE:	<1
VISCOSITY 40°C (100°C):	32.11 (5.57)
MOLECULAR WEIGHT:	NA
PERCENT VOLATILE:	NA

10. STABILITY AND REACTIVITY

STABILITY:	Stable
INCOMPATIBILITY:	Strong oxidants, strong acids and caustics
POLYMERIZATION:	Hazardous polymerization is not expected to occur.
THERMAL DECOMPOSITION:	CO_2 (CO with incomplete combustion.

11. TOXICOLOGICAL INFORMATION

EYE:	Products represented by this MSDS may cause mild irritation to eyes.
DERMAL:	Products represented by this MSDS may cause mild irritation to skin.
INHALATION:	Mists or hot vapors above applicable applicable workplace exposure levels may cause drowsiness, headache, nausea, and irritation to mucous membranes and the respiratory tract.
INGESTION:	Upon ingestion of large quantities, generalized depression, headache, drowsiness, nausea, vomiting or diarrhea may occur. Small doses may produce irritation or diarrhea.
INJECTION:	Injection under the skin, in muscle or into the blood stream may cause irritation, erythema, edema or severe tissue damage.

CHRONIC EXPOSURE SYMPTOMS:	Prolonged and/or frequent contact may cause drying, cracking (dermatitis), folliculitis irritation, erythema and edema.

NA - NOT APPLICABLE ND - NO DATA NE - NOT ESTABLISHED

12. HEALTH INFORMATION

HMIS CODE: HEALTH: 1 FIRE: 1 REACTIVITY: 0

No	Highly Toxic	No	Sensitizer
No	Toxic	No	Reproductive Effects
No	Corrosive	No	Mutagen
No	Irritant	No	Target Organ

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: It is the responsibility of the user to determine if the material is a hazardous waste at the time of disposal. Determine compliance status with all applicable requirements prior to disposal.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION) INFORMATION

PROPER SHIPPING NAME:	Petroleum Lubricating Oil
HAZARD CLASS:	Non-Hazardous
HAZARD IDENTIFICATION NUMBER:	None assigned
DOT PLACARD:	None
COMPATIBILITY CATEGORY:	Group 33

15. REGULATORY INFORMATION

SARA SECTION 313 - TOXIC CHEMICALS:
This product is not known to contain any components in concentrations above *de minimis* levels that are listed in 40 CFR 372 pursuant to the requirements of SARA Section 313.

SARA SECTION 311 - HAZARD CATEGORIES:
This product may meet one or more of the criteria for the hazard categories defined in 40 CFR Part 370 as established be Sections 311 and 312 of SARA as indicated below:

No	IMMEDIATE (ACUTE) HEALTH HAZARD	No	SUDDEN RELEASE OF PRESSURE HAZARD
No	DELAYED (CHRONIC) HEALTH HAZARD	No	REACTIVE HAZARD
No	FIRE HAZARD		

SARA SECTION 302 - EXTREMELY HAZARDOUS WASTE:
This product is not known to contain any components in concentrations greater than one percent that are listed as Extremely Hazardous Substances in 40 CFR Part 355 pursuant to the requirements of Section 302(a) of SARA.

CLEAN WATER ACT (CWA):
Under the CWA, discharges of crude oil and petroleum products to surface water without proper Federal and State permits must be reported immediately to the National Response Center at (800) 424-8802.

CERCLA HAZARDOUS SUBSTANCES:
As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance.

U.S. TSCA INVENTORY
All components of this material are on the U.S. TSCA Inventory or are not required to be listed on the U.S. TSCA Inventory.

16. OTHER INFORMATION

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE,HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. XCEL OIL CO. BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS.

NFPA HAZARD RATING	least - 0	slight - 1	moderate - 2	high - 3	extreme - 4
HMIS HEALTH RATING	least - 0	slight - 1	moderate - 2	high - 3	extreme - 4

NA - NOT APPLICABLE ND - NO DATA NE - NOT ESTABLISHED

ATTACHMENT 3

Sierrita
Hazardous Waste Training Program

Job Title *40 CFR 265(d)(1)*	Employee Name(s) *40 CFR 265(d)(1)*	Start Date (When assigned waste duties) (2)	Written Job Description/Duties *40 CFR 265.16(d)(2)*	Requisite Skills, Education, or Other Qualifications *40 CFR 26516.(d)(2)*	Type and Amount of Introductory and Continuing Training *40 CFR 265(d)(3)*	Location of Training Records *40 CFR 265(d)(4)*	Dates of Training Completion *40 CFR 265(d)(4)*			
							MSHA	RCRA	DOT	HAZWOPER
Waste Coordinators (1)										
Chief Environmental Engineer	Sherry Burt-Kested (current)	January, 2009	Oversight and coordination of waste generation activities, including inspections and waste handling, characterization, profiling, storage, disposal and shipment.	See HR Job Description. In addition, these individuals must have an understanding of safety principles associated with mining operations, hazardous waste management and basic chemistry, and, at minimum, a high school education.	MSHA 24 hour *(once)* MSHA 8-hour Refresher *(annually)* DOT Training *(Triennially)* DOT Security Training *(Triennially)* RCRA Training *(Annually)*	Environmental Training Binder, Environment, Land and Water Office	See ELW Training Tab			
Chief Environmental Engineer	Martha Mottley (previous coordinator - current back-up)									
Environmental Engineer	Clint Beck (Back-up)	Jan., 2010								
Hazardous Waste Technicians (Environmental Technicians and Trained Environmental Engineers) (1)										
Sr. Environmental Tech	Koretta Vault (primary)	Sept. 2006	Coordination of waste generation activities, including inspections and waste handling, characterization, profiling, storage, disposal and shipment with oversight from the Waste Coordinator.	See HR Job Descriptions. In addition, these individuals must have an understanding of safety principles associated with mining operations, hazardous waste management and, at minimum, a high school education.	MSHA 40 hour (once) MSHA 8-hour Refresher (annually) DOT Training (Triennially) DOT Security Training (Triennially) RCRA Training (Annually)	Environmental Training Binder, Environment, Land and Water Office	See ELW Training Tab			
Environmental Technician	Alexis Alvarez (primary)	July, 2009								
Environmental Engineer I	Bill Dorris (back-up)	Jan., 2009								
Environmental Engineer I	Kali Hoyak (back-up)	May, 2005								
Environmental Engineer I	Diana Kelts (back-up)	February, 2007								
Environmental Engineer I	Deborah Chismar (back-up)	August, 2002								
Emergency Coordinators										
Manager, Health and Safety	Paul Boman		Primary Emergency Coordinator - Implements the Contingency Plan for Hazardous Waste and Used Oil Processing as needed	Trained on the Contingency Plan for Hazardous Waste and Used Oil Processing	MSHA 24 hour (once) MSHA 8-hour Refresher (annually) Annual RCRA Training provided under the direction of the Waste Coordinators.	Health and Saftey Department	See ELW Training Tab			
EMS Coordinator	Matt Kierstead (previously Richard Wade McGee)	June, 2010	Alternate Emergency Coordinator - Implements the Contingency Plan for Hazardous Waste and Used Oil Processing as needed	Trained on the Contingency Plan for Hazardous Waste and Used Oil Processing	MSHA 24 hour (once) MSHA 8-hour Refresher (annually) Annual RCRA Training provided under the direction of the Waste Coordinators.	Health and Saftey Department				

(1) - Authorized to sign DOT Manifests provided DOT Training is current (e.g. within previous 36 months)
(2) - MSHA Training must be completed prior to start date; DOT Training must be completed within first 90 days; RCRA training must be completed within first 180 days.
INST - Instructed the Course
NT - Not Tracked
RCRA = Hazardous Waste Training

MSHA Training Components - Site Communications and Alarm Systems, Response to fires and Explosions, Response to Spills (including potential groundwater contamination incidents), Shutdown of Operations, Basic First Aid and CPR, use of basic emergency
DOT Training Component - Hazardous Materials Identification, Packaging, Labeling, Loading, Storage and Security
RCRA Training Components - Hazardous Waste Identification, Handling, Storage, Inspections, and Disposal
HAZWOPER Components - Working with Hazardous Materials and Hazardous Wastes and methods for inspecting, repairing, and replacing facility emergency and monitoring equipment

Note: There are no automatic waste-feed cutoff systems