

Douglas A. Ducey  
Governor

# ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY



Misael Cabrera  
Director

June 30, 2020  
VRP 20-170

Mr. David Rhoades  
President and General Manager  
Freeport-McMoRan Sierrita Inc.  
P.O. Box 527  
Green Valley, AZ 85614-0527

**RE: Administrative Closure**  
**Former CLEAR Plant Exposure Area**  
**Former Esperanza Mill Exposure Area**  
Freeport Sierrita Mine  
6200 W. Duvall Mine Road  
Green Valley, Arizona  
VRP Site Code: 100073-03

Dear Mr. Rhoades:

The Arizona Department of Environmental Quality (ADEQ) Voluntary Remediation Program (VRP) hereby grants Freeport-McMoRan Sierrita Inc. (FMI) an **Administrative Closure** for the work specified below, completed at the Freeport Sierrita Mine, located at 6200 West Duval Mine Road in Green Valley, Arizona.

The areal extent of the Administrative Closure is represented on **Figure 1**, attached. The areas included in the Administrative Closure are the Former Copper Leach Electrowinning and Regeneration (CLEAR) Plant Exposure Area (EA), inclusive of the Former CLEAR Plant, Former Evaporation Pond, and the Old D Pond, and the Former Esperanza Mill EA, inclusive of the Former Esperanza Mill, the Former C Pond and C Pond Spoils, the Former Raffinate Pond, and the Former Laydown Yard.

The contaminants of concern (COCs) included in the Administrative Closure are arsenic, copper, lead, molybdenum, radium-226, radium-228, uranium-235, and uranium-238. In addition, the Administrative Closure includes the contaminants of potential concern (COPCs) antimony, barium, beryllium, cadmium, chromium, cobalt, manganese, mercury, nickel, selenium, thallium, and zinc.

**Based on significant review and formal approval of a baseline human health risk assessment (BHHRA) and associated investigations, ADEQ has concluded:**

- 1) Within the EAs, there are no risks to human health associated with current and/or future outdoor commercial/industrial workers, future trespassers, or future construction workers from the soil and sediment for the COCs or COPCs.**
- 2) There is no evidence of a threat to surface water from the COCs/COPCs emanating from the EAs evaluated in the BHHRA.**
- 3) There is no evident threat to groundwater from the COCs/COPCs emanating from the EAs evaluated in the BHHRA.**

Pursuant to Arizona Revised Statutes (A.R.S.) § 49-175(B)(2) and Arizona Administrative Code (A.A.C.) R18-7-206(D), FMI has evaluated the aforementioned COCs and COPs such that the evaluated receptor populations will not be exposed to concentrations exceeding an unacceptable excess lifetime cancer risk (ELCR) nor exceed a hazard index (HI) of 1 in soil. Furthermore, pursuant to A.R.S. §§ 49-175(B)(3) and 49-175(B)(4), FMI has mitigated risk to surface water and groundwater in the same exposure areas.

The following table illustrates the approved ELCRs and HIs for receptor exposure in soil/sediment in the EAs:

<b>Former CLEAR Plant Exposure Area <sup>1</sup></b>		
Receptor	Shallow Soil/Sediment	Shallow and Deep Soil/Sediment
<b>Current Scenario</b>		
Site-Specific Outdoor Commercial/Industrial Worker	ELCR = $8 \times 10^{-5}$ ; HI=0.3	Not applicable
<b>Future Scenario</b>		
Site-Specific Outdoor Commercial/Industrial Worker	ELCR = $8 \times 10^{-5}$ ; HI=0.2	ELCR = $9 \times 10^{-5}$ ; HI=0.2
Hypothetical Construction Worker	Not applicable	ELCR = $8 \times 10^{-6}$ ; HI=0.6
Hypothetical Adolescent Trespasser	ELCR = $2 \times 10^{-6}$ ; HI=0.04	ELCR = $2 \times 10^{-6}$ ; HI=0.03
<b>Former Esperanza Mill Exposure Area <sup>2</sup></b>		
Receptor	Shallow Soil/Sediment	Shallow and Deep Soil/Sediment
<b>Current Scenario</b>		
Site-Specific Outdoor Commercial/Industrial Worker	ELCR = $9 \times 10^{-5}$ ; HI=0.3	Not applicable
<b>Future Scenario</b>		
Site-Specific Outdoor Commercial/Industrial Worker	ELCR = $9 \times 10^{-5}$ ; HI=0.3	ELCR = $8 \times 10^{-5}$ ; HI=0.2
Hypothetical Construction Worker	Not applicable	ELCR = $8 \times 10^{-6}$ ; HI=0.9
Hypothetical Adolescent Trespasser	ELCR = $2 \times 10^{-6}$ ; HI=0.07	ELCR = $2 \times 10^{-6}$ ; HI=0.05

**Note:**

1. The Former Copper Leach Electrowinning and Regeneration (CLEAR) Plant Exposure Area (EA) includes the Former CLEAR Plant, Former E Pond, Former Evaporation Pond, and the Old D Pond. The COCs in soil/sediment for the Former CLEAR Plant EA include arsenic, copper, lead<sup>3</sup>, radium-226, radium-228, uranium-235, and uranium-238.
2. The Former Esperanza Mill EA includes the Former Esperanza Mill, the Former C Pond and C Pond Spoils, the Former Raffinate Pond, and the Former Laydown Yard. The COCs in soil/sediment for the Former Esperanza Mill EA include arsenic, lead<sup>3</sup>, molybdenum, radium-226, radium-228, uranium-235, and uranium-238.
3. In accordance with USEPA guidance, lead exposure was evaluated in the BHHRA using the USEPA's Adult Lead Model (ALM). Based on the ALM, exposures to lead in soil/sediment at the Former CLEAR Plant EA and the Former Esperanza Mill EA are not likely to result in adverse health effects in current/future outdoor commercial/industrial workers, future construction workers, or future trespassers.

For detailed information on the work completed at the Site, including the detailed risk assessment, as well as the evaluation of surface and groundwater exposure routes, please reference the following significant documents:

- April 2008: *Soil, Surface Water, and Groundwater Sampling in the CLEAR Plant and Esperanza Mill Areas*, prepared by Hydro Geo Chem Inc. for Freeport-McMoRan Sierrita Inc.
- April 2008: *Voluntary Remediation Program Investigation Work Plan, Volumes I and II*, prepared by URS Corporation for Freeport-McMoRan Sierrita Inc.
- September 2008: *Addendum to Sampling and Analysis Plan & Quality Assurance Project Plan*, prepared by URS Corporation for Freeport-McMoRan Sierrita Inc.
- December 2012: *Soil and Sediment Characterization Report*, prepared by URS Corporation for Freeport-McMoRan Sierrita Inc.

- January 2013: *Voluntary Remediation Program Former CLEAR Plant Area Soil Excavation and Tier I Screening Risk Evaluation Report*, prepared by Arcadis for Freeport-McMoRan Sierrita Operations.
- February 27, 2013: “Approval of Approval of Remediation Report (Revised Former Clear Plant Area Soil Excavation and Tier I Screening Risk Report)”, letter prepared by ADEQ and issued to Freeport-McMoRan Sierrita Operations (VRP 13-166).
- August 14, 2013: *Addendum to the Soil and Sediment Characterization Report*, prepared by Arcadis on behalf of Freeport-McMoRan Sierrita Operations.
- December 2013: *Groundwater Investigation Report*. Prepared for Freeport-McMoRan Sierrita Operations, Green Valley, Arizona. Voluntary Remediation Program – VRP Site Code: 100073-03.
- April 24, 2015: *Baseline Human Health Risk Assessment Work Plan*, prepared by Arcadis for Freeport-McMoRan Sierrita Operations.
- July 2015: *Former CLEAR Plant Area Paving Project Soil Excavation and Tier I Screening Risk Evaluation Report*, prepared by Arcadis for Freeport-McMoRan Sierrita Operations.
- September 2015: *Data Gaps Work Plan*, prepared by Arcadis for Freeport-McMoRan Sierrita Operations.
- November 12, 2015: “Approval of Revised Data Gaps Work Plan; including October 2015 Field Sampling Plan Addendum and October 2015 Quality Assurance Project Plan Addendum”, prepared by ADEQ and issued to Freeport-McMoRan Inc. - Sierrita Operations (VRP 16-130).
- October 2017: *Background Soil Assessment Work Plan*, prepared by Arcadis for Freeport-McMoRan Sierrita Inc.
- October 2018: *Background Soil Assessment Report*, prepared by Arcadis for Freeport-McMoRan Sierrita Inc.
- February 2020: *Baseline Human Health Risk Assessment* (final), prepared by Arcadis initially on June 7, 2016, and revised on November 2018, August 2019, and November 2019. Document prepared for Freeport-McMoRan Sierrita Inc.
- March 17, 2020: “Approval of Final Baseline Human Health Risk Assessment”, letter prepared by ADEQ and issued to Freeport-McMoRan Sierrita Inc. (VRP 20-133).
- March 17, 2020: “Permission to Proceed with Request for Administrative Closure”, letter prepared by ADEQ and issued to Freeport-McMoRan Sierrita Inc. (VRP 20-134).
- June 4, 2020: *Request for Administrative Closure*, prepared by Arcadis for Freeport-McMoRan Sierrita Inc.

**The issuance of this letter officially closes further requirements to evaluate within the Former CLEAR Plant EA and the Former Esperanza Mill EA at the Freeport-McMoRan Inc. Sierrita Mine VRP Site.** The Administrative Closure means that no additional action shall be taken by ADEQ to remediate the portion of the Freeport Sierrita Mine covered by this determination, unless the determination is rescinded or amended based on the discovery of new information indicating there may be deficient, inaccurate, misleading, previously unknown, or incomplete data regarding the portion of the Freeport Sierrita Mine covered by this determination. An Administrative Closure does not release or discharge any person from liability for a release of contaminants not covered by the work plan approved pursuant to A.R.S. § 49-177 or outside the boundary of the site or portion of the site covered by the determination.

If you have any questions, please feel free to call me at (602) 771-1612 or contact me via electronic mail at [green.scott@azdeq.gov](mailto:green.scott@azdeq.gov).

Regards,

A handwritten signature in blue ink, appearing to read "Scott Green", with a long horizontal flourish extending to the right.

Scott Green, Manager  
Voluntary Remediation Program

cc: Dave Gosen, FMI – *sent via email*  
William Hart, FMI – *sent via email*  
Katy Brantingham, ARCADIS – *sent via email*  
Anne Thatcher, ARCADIS – *sent via email*








**SITE LOCATION**



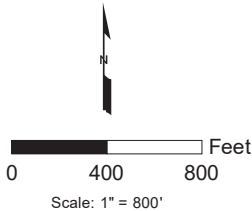
Scale: 1" = 200 miles

**LEGEND**

-  Administrative Closure Boundaries
-  Former Esperanza Mill subarea; included in Administrative Closure
-  Area excluded from Administrative Closure\*

**NOTES**

- Aerial photo source: ESRI World Imagery.
- \* = Areas excluded from Administrative Closure include Aquifer Protection Program (APP) facilities and areas previously approved for No Further Action (NFA).



FREEPORT-MCMORAN SIERRITA INC.  
GREEN VALLEY, ARIZONA

**ADMINISTRATIVE CLOSURE AREA BOUNDARIES**



FIGURE  
**1**