

**STATEMENT OF BASIS**  
**U.S. Environmental Protection Agency, Region 9**  
**Draft Class III Underground Injection Control Area Permit**

**Permit Number R9UIC-AZ3-FY16-1**  
**Excelsior Mining Arizona, Inc.**

**Location:**

Gunnison Copper Project, approximately 62 miles east of Tucson and 17 miles southwest of Willcox, Arizona - Township 15 South, Range 22 East, Section 36 and Township 15 South, Range 23 East, Section 31 in Cochise County, Arizona

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**I. Purpose of the Statement of Basis**

The U.S. Environmental Protection Agency, Region 9 (EPA) has prepared this Statement of Basis for the draft Underground Injection Control (UIC) Class III Area Permit (Draft Permit) for Excelsior Mining Arizona, Inc. (Excelsior). Pursuant to the UIC regulations in Title 40 of the Code of Federal Regulations (CFR) §124.7, the purpose of this Statement of Basis is to briefly describe the principal facts and the considerations that went into preparing the Draft Permit. To meet these objectives, this Statement of Basis contains background information on the permit process, a description of the facility, the aquifer exemption for the project, a brief discussion of the specific permit conditions, and the reasons for these permit conditions.

## **II. Permit Process**

### **Application and Review Period**

The EPA Water Division Director has authority to issue permits for underground injection activities under 40 CFR §144.31. Excelsior is applying for UIC Permit number R9UIC-AZ3-FY16-1 to construct and operate an in-situ copper recovery (ISR) facility known as the Gunnison Copper Project (Project), located in Cochise County, Arizona. If authorized, the wells at the Project site will be used to inject dilute sulfuric acid solution into the ore-body and recover copper-laden solution to produce copper.

In February 2016, Excelsior submitted a UIC Class III Permit application for the Gunnison Copper Project. Over the following year and a half, Excelsior provided substantial clarifications and supplemental information to modify and update the Permit application to address technical questions from EPA. After completing a thorough technical review of all submitted information, EPA has determined that the information provided by Excelsior is sufficient to prepare the Draft Permit. The Permit would provide authorization to construct, test, and inject at the proposed Project site, followed by aquifer restoration, post-rinse monitoring, and closure operations.

The total duration of this authorization would be approximately twenty-eight (28) years, including an approximately twenty-three (23) year project operation and restoration life and a five (5) year post-rinse monitoring period. The Draft Permit contains pre-drilling, construction, operation, maintenance, monitoring, reporting, aquifer restoration, closure, abandonment, and financial responsibility requirements.

Based on the operational standards, monitoring requirements, closure and restoration requirements, and existing geologic setting, EPA believes the activities allowed under the proposed Draft Permit are protective of underground sources of drinking water (USDWs) defined at 40 CFR §144.3 as required by the Safe Drinking Water Act (SDWA).

### **Consultation**

As part of the permit process, pursuant to 40 CFR §144.4, EPA is required to consider whether other federal laws, specifically Section 106 of the National Historic Preservation Act (NHPA) and Section 7 of the Endangered Species Act (ESA), apply to the issuance of a UIC Permit.

Under Section 7 of the ESA, EPA is required to ensure that any action authorized by the Agency does not jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat. EPA informally consulted with the U.S. Fish and Wildlife Service (USFWS) of the Arizona Ecological Services Field Office by correspondence dated April 14, 2017, on the determination that the proposed project may affect, but is not likely to adversely affect the lesser long-nosed bat listed as an endangered species under ESA. EPA provided the USFWS a copy of the biological evaluation prepared by Excelsior on December 15, 2016, which documented the screening for the potential occurrence of special-status species at the project area and the evaluation of the effects from the proposed action. The USFWS concurred with our determination that the proposed action may affect, but is not likely to adversely affect the lesser long-nosed bat and required no additional consultation. EPA also determined that the proposed action will have no effect on other listed species in

Cochise County because the project area is outside of their known ranges or field surveys confirm no detections in the project area. Listed species with “no effect” determinations do not require review by the USFWS.

The historic preservation review process mandated by Section 106 of NHPA is outlined in regulations issued by the federal Advisory Council on Historic Preservation (ACHP) titled, “[Protection of Historic Properties](#)” at 36 CFR Part 800. Considering these requirements, EPA determines whether the proposed federal permit is an undertaking and whether it has the potential to cause effects on historic properties. Issuance of a federal permit is considered a federal undertaking; therefore, EPA is required to meet the statutory responsibilities under Section 106. EPA consulted with the Arizona State Historic Preservation Office (SHPO) by letter dated March 15, 2017 describing the project, the area of potential effect, steps taken to identify historic properties, and the proposed finding of no historic properties affected. The SHPO concurred with EPA’s finding that no historic properties will be affected based on the information. EPA has no further action required under Section 106 for this undertaking.

### **Public Participation**

Pursuant to 40 CFR §124.10, the public shall be given at least thirty (30) days to review and comment on draft UIC permits. For this Draft Permit, EPA is providing a thirty (30) day public comment period. All persons, including the applicant, who object to any condition of the Draft Permit or EPA’s decision to prepare a Draft Permit must raise all reasonably ascertainable issues and submit all reasonable arguments supporting their position by the close of the comment period on November 24, 2017 (40 CFR §124.13).

In addition, as described below in Section V, EPA is proposing an Aquifer Exemption, concurrent with the Draft Permit. Pursuant to 40 CFR §144.7(b)(3), EPA may, after public notice and opportunity for a public hearing, identify an exempted aquifer. EPA is providing the public 30 days to submit comments on the proposed Aquifer Exemption; members of the public shall submit any comments by the close of the comment period on November 24, 2017. Details about EPA’s Aquifer Exemption review and conclusions are provided below and in a proposed Record of Decision that is part of the Administrative Record for this UIC permitting action.

During the comment period, any interested person may request a public hearing on the Draft Permit and/or the proposed Aquifer Exemption. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing (40 CFR §124.11). Any hearing scheduled by EPA will include a 30-day notice to the public. EPA is providing public notice of the comment period by publication in two newspapers - the Arizona Range News and the Sierra Vista Herald.

### **Final Decision-Making Process**

After the close of the public comment period, EPA will review and consider all written comments and oral testimony relevant to the Draft Permit, proposed Aquifer Exemption, and application. EPA will prepare and send a response to comments to the applicant and each person who has submitted written comments or requested notice of the final permit decision. EPA will

also post a response to comments document on our website. The response to comments document will contain a response to all significant comments on the Draft Permit and the proposed Aquifer Exemption, EPA's final permitting and Aquifer Exemption decisions, any changed permit conditions, the reasons for the changes, and procedures for appealing the final permitting decision. The final permit decision shall be to either issue or deny the Permit. The final decision shall become effective no sooner than thirty (30) days after EPA's service of the notice of decision. Within thirty (30) days after the final permit decision has been issued, any person who filed comments on the Draft Permit or takes issue with any changes from the draft to the final permit decision, may petition the Environmental Appeals Board to review any condition of the permit decision. Commenters are referred to 40 CFR §124.19 for procedural requirements of the appeal process. If no comments request a change in the Draft Permit, the Permit shall become effective immediately upon issuance (40 CFR §124.15).

### **III. Description of the Project**

#### **The Ore Body and the In-Situ Copper Recovery Method**

The Project is in Cochise County, Arizona, approximately 62 miles east of Tucson and 17 miles southwest of Willcox, Arizona, on the southeastern flank of the Little Dragoon Mountains. The Project will encompass an area of approximately 524 acres, including an Area of Review (AOR) of 332 acres and a wellfield area of approximately 192 acres. The recoverable copper at the Project site is located between approximately 400 and 1,400 feet below the ground surface in a copper Oxide Bedrock Zone that is formed as coatings on rock fractures and as vein fill. The overlying strata are composed of alluvial basin-fill sediments. The ore body is in the saturated zone below the water table, which is approximately 244 to 655 feet below ground surface, based on water level measurements obtained in June 2015.

Excelsior proposes to recover copper by an ISR method using injection and recovery wells. This method involves injecting a dilute sulfuric acid-based solution (lixiviant) into the Oxide Bedrock Zone ore body, dissolving copper oxide minerals, and recovering the copper in solution. The copper-laden pregnant leach solution (PLS) is pumped out through surrounding recovery wells, followed by treatment at the surface to extract the copper from the PLS by means of a solvent extraction/electrowinning (SX/EW) process. The wellfield will consist of approximately 1,400 Class III injection and recovery wells to be interspaced approximately 71 feet apart in an alternating and repeating pattern.

Mining operations at the site will be implemented in three stages over twenty (20) years, followed by post-production and post-rinsing activities:

- Stage 1: Years 1 – 10 (producing 25 million lbs. copper per year)
- Stage 2: Years 11 – 13 (producing 75 million lbs. copper per year)
- Stage 3: Years 14 – 20 (producing 125 million lbs. copper per year)
- Post production: Years 21 – 23 (final rinsing)
- Post-rinse monitoring: 5 years or longer

Multiple mining blocks will be active during each stage. As mining of individual blocks is completed, the mining operations will be followed by a rinsing period while mining proceeds to

subsequent blocks. The final rinsing period for the last mining block is anticipated to be completed by Year 23.

In addition to the injection and recovery wells, the wellfield will include: twenty-two (22) observation wells (OWs), thirty (30) hydraulic control (HC) wells, up to one hundred twenty (120) rinse verification monitoring wells (RVW), up to thirty (30) intermediate monitoring wells (IMW), seventeen (17) closure verification wells (CVW), and five (5) point-of-compliance (POC) wells. The OWs will be aligned in eleven (11) well pairs just beyond the HC well perimeter to monitor the hydraulic gradient and specific conductance of groundwater during mining and rinsing operations. These Project wells are required around and within the wellfield to ensure that formation water quality is not degraded at and beyond the perimeter of the outer OW locations during Project operations. Monitoring at the CVWs and outer OWs is also intended to ensure that area water quality is maintained at the required levels during the five (5) year post-rinse monitoring period.

### **Surface Facilities and Impoundments**

In addition to the wellfield and required wells described above, the proposed Project includes the construction, operation, and eventual closure of surface facilities and impoundments. The project surface facilities include the SX/EW plant, an acid plant, a water treatment plant, a pipeline drain pond, an evaporation pond, a raffinate pond, a PLS pond, a recycled water pond, a clean water pond, a plant runoff pond, solids impoundments, and other ancillary facilities. The surface facilities and impoundments would occupy approximately 550 acres, including 192 acres occupied by the Project wellfield.

### **In-situ Copper Recovery Operations and Closure Plans**

All Project facilities will be constructed to prevent unauthorized discharges. The ISR project will consist of blocks of injection and recovery wells constructed to circulate lixiviant throughout the mineralized bedrock and recover acid-soluble copper from the orebody.

At the surface, copper will be removed from the extracted solution at the SX/EW plant, where pure copper cathode will be produced. Initially, the SX/EW plant and impoundments at the nearby Johnson Camp Mine will be used. As production starts up in Stage 2, an additional SX/EW plant and impoundments will be constructed at the Project site. After processing, the fluid will be recycled to the wellfield to begin the leaching cycle again.

Excelsior proposes to inject in the Oxide Bedrock Zone, which is located approximately 400 to 1,400 feet below ground surface. To prevent vertical excursion of injected fluids, the top of the injection zone will be a minimum of 40 feet below the first contact with the competent bedrock, and the bottom of the injection zone will be the top of the sulfide zone beneath the copper oxide zone. At maximum production in Stage 3, approximately 27,000 gallons per minute (gpm) of PLS will be extracted from the recovery wells and sent to the SX/EW plant.

Excelsior will be required to maintain hydraulic control of Project operations from the time that injection of lixiviant begins until the time that groundwater quality is restored to a level that meets the criteria specified in the UIC Permit. Hydraulic control will be maintained by increasing the recovery rate in the HC and/or extraction wells and/or reducing the injection rates

in the injection wells to maintain or increase the inward hydraulic gradient between OW pairs. Hydraulic control must be maintained at all times until Project closure is successfully completed, including during periods when groundwater or other rinse water solutions are injected during aquifer restoration and closure operations.

HC wells and OWs will be distributed around the wellfield, primarily along the eastern, southern, and northern boundaries, to maintain hydraulic control of the leach solution by creating an inward hydraulic gradient. OW pairs, located outside of the HC wells, will be used for measuring the static water levels to demonstrate inward gradients. In addition, the specific conductance of the groundwater will be monitored in the outer OWs to detect any unusual increases in the outer observation wells and verify maintenance of hydraulic control. HC wells and OWs will be installed and activated in sequence with a schedule synchronized with mine block and stage development. The proposed activation sequence schedule for the HC wells and OWs will be subject to revision and EPA review and approval as ISR operations for each mine block proceed in Stages 1, 2 and 3.

Existing coreholes and wells located within the 332-acre project AOR and within 100 feet of a mine block that are not intended for use as IMWs will be plugged and abandoned before injection commences in that mine block, in accordance with the Plugging and Abandonment Plan in Appendix C of the Permit. At the end of Project operations, all constituents of concern in the groundwater must be restored to maximum contaminant levels (MCLs) or pre-operational background concentrations if those concentrations exceed the MCLs. After aquifer restoration and post-rinse monitoring confirms the stability of aquifer water quality standards for at least five (5) years, all injection and recovery wells, OWs, HC wells, and monitoring wells will be abandoned in accordance with the Plugging and Abandonment Plan. Plugging and Abandonment plans may be modified, subject to EPA approval.

#### **IV. Summary of Specific Permit Conditions**

The purpose of EPA's UIC Program is to protect drinking water aquifers, referred to as "underground sources of drinking water" or "USDWs," from contamination due to injection activities, as mandated under the SDWA. To protect public health and USDWs, EPA is proposing permit conditions and requirements for pre-drilling, construction, corrective actions, operation, monitoring and reporting, restoration and closure, plugging and abandonment, permit duration, and financial responsibility in the Draft Permit. The sections below summarize the proposed conditions, requirements, and other permit considerations.

##### **Requirements Prior to Drilling, Testing, Constructing, or Operating (Part II, Section A of the Draft Permit)**

The Draft Permit requires Excelsior to provide evidence of financial assurance prior to starting injection well drilling and construction. In addition, the Permit calls for adequate notification of activities to construct, test, and operate the proposed facility and timely reporting of those activities.

### **Well Construction (Part II, Section C of the Draft Permit)**

The Draft Permit requires Excelsior to notify EPA of the location of the wells constructed under the Permit.

Logs and other tests conducted during drilling and construction must include open-hole geophysical logs, casing logs, and injection formation tests. Open-hole logs must be conducted in each well boring for formation evaluation, depth control, and detection of borehole anomalies. Excelsior must perform cased-hole geophysical logs, including gamma ray and temperature logs in all wells, and cement bond logs in all steel-cased wells over the entire length of the casing in each well.

Drilling, work-over, and plugging procedures must comply with the applicable portions of the Arizona Oil and Gas Conservation Commission regulations of the Arizona Administrative Code. Excelsior is required to case and cement the wells to contain injected fluids within the permitted injection zone and prevent the movement of fluids into or between USDWs. To minimize the potential for migration of ISR fluids out of the injection zone and into the basin fill unit during injection and recovery operations, Excelsior will case and cement all Project wells from at least one-hundred (100) feet above the bedrock surface or the top of the saturated zone to at least forty (40) feet below the top of the competent bedrock surface. Fiberglass reinforced plastic (FRP) casing or steel casing will be installed in injection and recovery wells. FRP casing or FRP casing and polyvinyl chloride casing will be installed in POC, HC, and OWs. Proposed drilling, work-over, and plugging procedures must be submitted to EPA for approval.

The Draft Permit requires the installation and maintenance of monitoring devices in injection and recovery wells or manifolds necessary to continuously measure and record injection pressure, annulus pressures, flow rates, and injection and production volumes. The injection wells must have pressure gauges to monitor and prevent exceedance of the maximum allowable injection pressure and to monitor mechanical integrity. Excelsior must also install a conductivity sensor or array of sensors in the outer OWs to detect any excursions of injected fluids or preferential flow during ISR and rinsing operations and to detect any exceedances of water quality standards during the post-rinse monitoring period. In addition, single conductivity sensors will be placed at strategic depths in the IMWs to monitor and control ISR fluid movement.

Excelsior must also propose and implement a formation testing and geophysical logging program and use those results to estimate and report values for porosity, permeability, formation water resistivity, and total dissolved solids concentrations and to characterize the lithology and rock mechanical properties of both the injection and confining zones identified within the permitted geological sequence. Aquifer pump tests will be performed prior to injection to evaluate the subsurface characteristics of the Oxide Bedrock Zone. Excelsior will compare the results of the aquifer tests to parameters used in the groundwater flow model and revise the model parameters accordingly if the resulting test parameters are significantly different from those used in the original model.

The Draft Permit requires Excelsior to submit a final Well Construction Report for all Project wells, including logging and other results, with a schematic diagram and detailed description of construction, including driller's log and materials used, to EPA within sixty (60) days after completion of all Project wells associated with a specific mine block. Excelsior must give advance notice to EPA of any planned physical alterations or additions to the permitted injection wells.

**Corrective Actions (Part II, Section D of the Draft Permit)**

Before injection and recovery wells are placed in service, all existing non-Class III wells and coreholes within the proposed Project mine blocks and non-Class III wells and coreholes not intended for use as IMWs within one-hundred (100) feet of a mine block will be abandoned per the Plugging and Abandonment Plan in Appendix C of the Permit. Excelsior must notify EPA and submit final Plugging and Abandonment plans and procedures to EPA for approval at least thirty (30) days in advance of abandonment operations.

**Well Operation (Part II, Section E of the Draft Permit)**

The Operations Plan submitted with the permit application is included in Appendix E of the Draft Permit. Planned injection rates will vary in each of the three stages of mining operations: in Stage 1 (years 1-10), the planned injection rate is 5,300 gpm; in Stage 2 (years 11-13), it will be 15,800 gpm, and in Stage 3 (years 14-20) it is 25,600 gpm.

During ISR operations, the injection rate may not exceed the recovery rate in a mine block and the extraction rate of recovery and HC wells must not fall below 101 percent of the injection rate on a daily average basis without prior written approval from EPA. An inward hydraulic gradient of at least 0.01 foot/foot between paired OWs must be maintained to demonstrate hydraulic control. In addition, Excelsior will measure specific conductance in the outer OWs to confirm hydraulic control, and must take actions to restore hydraulic control within 24 hours of detection of a possible loss of hydraulic control.

Prior to injection, Excelsior must demonstrate that the Project wells will maintain proper mechanical integrity. The Draft Permit requires periodic mechanical integrity tests (MITs) via casing/tubing annular pressure tests and continuous pressure monitoring in injection wells, radioactive tracer and/or temperature surveys, and cement evaluation analysis to ensure the protection of USDWs. Pressure monitoring in the tubing/casing annulus of injection wells with packers installed will be monitored and recorded continuously to verify that internal mechanical integrity of the wellbore is maintained during operations. Radioactive tracer and/or temperature surveys and cement bond log surveys will be conducted to verify the absence of significant fluid movement through vertical channels adjacent to the wellbore. Loss of mechanical integrity requires notification of EPA and action to restore mechanical integrity or plug and abandon the well. A demonstration of mechanical integrity is required within thirty (30) days following the installation of a new Project or monitoring well. Injection and recovery wells must be pressure tested at least once every five (5) years while active and until the wells are closed and abandoned. If an injection well is inactive for two (2) years, a notice of actions and procedures must be provided to EPA that ensures that USDWs will not be endangered during the period of temporary abandonment, or the well must be plugged and abandoned.

The injection pressure limitations in the Draft Permit are based on the results of field test data at the Project site, including packer pressure data from testing within 28 intervals in six existing boreholes during well testing operations conducted in 2015. Injection wells will be operated at pressures no more than 90 percent of the lowest fracture pressure of the individual formations in the Oxide Bedrock Zone. The Draft Permit also requires that Excelsior operate their injection wells in such a manner to not initiate or propagate fractures in the injection formation or the confining zone, or to cause migration of fluids into or between the surrounding USDWs.

Injection fluids will be limited to only fluids authorized by the Permit and generated by Project operations. Fresh water may be injected to assess the hydraulics of the injection and recovery patterns in the Project wellfield, to assess the performance of related surface facilities, and for rinsing operations. The estimated composition of the injectate as submitted with the Permit application is incorporated into the Permit and will be binding on Excelsior unless it is revised and approved by EPA. During rinsing and closure operations, fresh groundwater may be injected to restore the zone to federal drinking water standards or pre-operational background concentrations, whichever is greater.

**Monitoring, Record Keeping, and Reporting of Results (Part II, Sections F and G of the Draft Permit)**

The Draft Permit requires continuous monitoring of injection and recovery rates, total cumulative volume of injectate and produced fluids, wellhead and downhole injection pressures, annular pressure in wells with packers installed, and injection and produced fluid temperatures, as well as daily monitoring of injection and recovered fluid volumes.

Excelsior will perform water quality monitoring at the POC and outer OWs during Project operations; in addition, selected injection or recovery wells will be converted to water quality monitoring wells during the rinsing and post-rinse monitoring periods. Excelsior will monitor on a quarterly basis for Level 1 parameters (constituents of ISR solutions that are most likely to provide an early indication of groundwater impacts), and perform annual monitoring of Level 2 parameters (probable constituents of the ISR solutions for which primary MCLs have been established and other constituents that are likely to appear in greater concentrations in groundwater impacted by ISR solutions). EPA will establish Alert Levels (ALs) for specific analytes as approved by the Director, and Aquifer Quality Limits (AQLs) for parameters with primary MCLs. Prior to the commencement of injection, Excelsior will collect baseline water quality samples for all required parameters so that accepted statistical methods can be applied to assign ALs and AQLs at all monitoring wells.

Hydraulic control monitoring of the Oxide Bedrock Zone will be performed using thirty (30) HC wells and twenty-two (22) paired OWs at the perimeter of the wellfield. In addition to water levels, Excelsior will continuously monitor specific conductance in the outer OWs to verify that hydraulic control is maintained and to detect excursions of ISR fluids from the wellfield.

HC wells and OWs will be installed and activated sequentially as ISR operations progress in Stages 1, 2, and 3. At least six HC wells will be installed initially, three at the southern wellfield boundary and at least three at the eastern boundary of the wellfield. At least four OW pairs will be

installed and monitored along the eastern perimeter of the wellfield prior to initiation of ISR operations in year one. The three HC wells at the southern boundary will be used for monitoring water levels and SC daily for the first few years of operations, or will be activated as HC pumping wells if a loss of hydraulic control becomes evident at the southern boundary. In addition, groundwater samples shall be collected in the HC wells for analysis of SC and other indicator parameters once per month for at least the first year as a backup and comparison to the daily SC monitoring. The three OW pairs planned for the southern wellfield perimeter will be installed and monitored in later years unless the HC wells demonstrate a loss of hydraulic control, in which case, the OWs will be installed and activated as soon as possible, and the HC wells will start pumping to restore hydraulic control at the southern boundary. Specific conductance and water level data in IMWs located near the southern wellfield boundary would provide an early warning of ISR fluid movement toward the southern boundary and trigger contingency actions to reverse the fluid movement.

The three active HC wells at the eastern boundary and recovery wells within active mine blocks are expected to maintain hydraulic control in the early years of ISR operations. Additional HC wells will be installed and activated along the eastern perimeter as needed to maintain hydraulic control. The proposed activation sequence schedule for the HC wells and OWs is subject to revision and EPA review and approval as ISR operations for each mine block proceed in Stages 1, 2 and 3.

Excelsior is required to maintain all operational and monitoring records, and to submit quarterly summary reports of operations and monitoring activities to EPA during the Project's operational, closure, and post-rinse monitoring periods.

#### **Contingency Plans (Part II, Section H of the Draft Permit)**

The Draft Permit includes contingency plans to address any loss of hydraulic control during Project and closure operations and for specific conductance and groundwater quality exceedances detected at POC, observation, and other monitoring wells during the life of the Project, including the post-rinse monitoring period. Excelsior is required to initiate corrective actions within 24 hours of their becoming aware of the loss of hydraulic control.

The Draft Permit includes provisions for verification and corrective actions to be initiated when groundwater quality exceedances are detected in the POC and outer OWs. Written reports to EPA are required within thirty (30) days of verification of an exceedance; they must provide an evaluation of the cause, impacts, and any mitigation of the discharge responsible for the exceedance.

#### **Restoration and Plugging and Abandonment (Part II, Section I of the Draft Permit)**

Aquifer restoration and closure activities will commence within sixty (60) days after the completion of copper recovery operations in individual mine blocks. Excelsior must restore groundwater quality in the injection and recovery zones to concentrations that are less than or equal to primary MCLs or to pre-operational background concentrations if the pre-operational background concentrations exceed MCLs. Excelsior is required to ensure that constituents without primary MCLs do not impact surrounding USDWs in a way that could adversely affect

the health of persons. At all times during injection and recovery zone rinsing, Excelsior must maintain hydraulic control of the injection and recovery zone by maintaining an inward hydraulic gradient at the OW pairs located at the perimeter of the wellfield. To close the wellfield, Excelsior will perform rinsing to remove residual PLS, post-rinse monitoring, and well abandonment, as described in the Wellfield Closure Strategy in Appendix F of the Permit. A three-step rinsing process will be implemented as follows: rinse three (3) pore volumes, rest for one (1) year, and rinse two (2) pore volumes. Excelsior will monitor the rinsing progress by analyzing fluids from all recovery wells, or a representative number of recovery wells based on statistical analysis of sampling results in all recovery wells after the third rinsing step. Excelsior will document the results of closure operations in a report to EPA and notify EPA of the schedule for commencement of plugging and abandonment operations. Excelsior will also perform post-rinse monitoring for at least five (5) years to ensure adequate protection of USDWs and submit a post-rinse report to EPA within thirty (30) days following completion of post-rinse monitoring.

After cessation of injection operations and completion of post-rinse monitoring, Excelsior is required to plug and abandon all Project wells and monitoring wells regulated by the Permit in accordance with the Plugging and Abandonment Plan, or as modified to ensure compliance with regulatory requirements. Excelsior will be required to comply with the Wellfield Closure Strategy in Appendix F of the Permit, the Plugging and Abandonment Plan in Appendix C of the Permit, and the AQL exceedance contingency plan to ensure that restoration operations are successful in returning the groundwater quality in the injection zone to the required levels.

#### **Operational and Post-Rinsing Audits (Part II, Section J of the Draft Permit)**

The Draft Permit requires Excelsior to conduct operational and post-rinsing audits of the computer modeling to update the predicted fate and transport of pollutants discharged during Project operations. These audits must be performed within six (6) months of the completion of the first year of operation for each of the three mining stages, and every five (5) years thereafter for Stages 1 and 3 until mine closure. The schedule for these audits may be adjusted, depending on the progress of Stage 1, 2, and 3 operations, subject to EPA's review and approval. Excelsior will submit reports to EPA describing the audit results (including the performance of the Project) as well as any changes in the conceptual model, any model redesign, and any recommended adjustments to the operational and post-rinse conditions.

#### **Duration of Permit (Part II, Section K of the Draft Permit)**

EPA proposes to issue the Permit and the authorization to inject and conduct restoration and closure activities at the Project site for a period of twenty-three (23) years followed by at least five additional (5) years for post-rinse monitoring unless terminated under the conditions set forth in Part III, Section B.1 of the Draft Permit.

#### **Financial Responsibility (Part II, Section L of the Draft Permit)**

Excelsior must demonstrate adequate financial resources to plug and abandon all wells associated with the Permit and ensure proper closure of site operations. Authorization to construct, inject, and operate the wells under the Permit will be granted only after such financial

assurance is in place and approved by EPA. The financial assurance mechanism and amount (\$8,792,000) will be reviewed and updated periodically, as required by EPA.

## **V. Aquifer Exemption**

EPA's regulations stipulate that an aquifer may be designated as an "exempted aquifer" if it meets specified criteria at 40 CFR §146.4. Such aquifers would otherwise qualify as USDWs and be protected, however, they are not currently used as drinking water sources and are not considered to have potential for use as drinking water sources in the future based on specific criteria. The effect of EPA's approval of an aquifer exemption is that the portion of the aquifer covered by the exemption is no longer protected as a USDW.

### **Aquifer Exemption Consideration for the Proposed Project (Part II, Section B of the Draft Permit)**

In conjunction with this Class III Area Permit, EPA, under the criteria at 40 CFR §146.4(a) and (b)(1), is proposing to exempt the oxide ore body in which the ISR wellfield will be located and portions of the basin fill above it and the sulfide zone below it within the proposed wellfield area.

The areal extent of the proposed Aquifer Exemption covers 332 acres at the surface. This includes the area of the wellfield associated with the mining project plus approximately 1,200 feet to the east (the direction of groundwater flow) and at least 250 feet to the north. The aquifer proposed for exemption includes a 400 to 800-foot-thick portion of the Oxide Bedrock Zone that contains the copper and portions of the sulfide zone below the Oxide Bedrock Zone, and the saturated portions of the basin fill zone above it.

EPA has reviewed whether the portion of the proposed exempt aquifer that will be impacted by the Project meet the regulatory criteria in 40 CFR §146.4(a) and (b)(1). Based on this review, EPA concluded that the portion of the aquifer that would be impacted by Project operations meets the criteria for an Aquifer Exemption because it: 1) does not currently serve as a source of drinking water; and 2) will not serve as a future source of drinking water because it contains minerals that are expected to be commercially producible. Additional detail about EPA's Aquifer Exemption review and conclusions are provided in a proposed Record of Decision that is part of the Administrative Record for this UIC permitting action.