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LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
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October 18, 2017

RECORD OF DECISION

CORPS FILE NO. (ACTION ID): SPL-2014-00065-MWL

APPLICANT: Freeport McMoRan Safford, Inc. (FMSI)

PROJECT NAME: Lone Star Ore Body Development Project

I have reviewed and evaluated, in light of the overall public interest, the documents and factors concerning the permit application for the proposed action, as well as the stated views of interested agencies and the public. In doing so, I have considered the possible consequences of the proposed action in accordance with regulations published in 33 Code of Federal Regulations (CFR) Parts 320 through 332 and 40 C.F.R. Part 230.

As described in the Final Environmental Impact Statement (EIS), the proposed action is to develop mineral resources associated with the Lone Star Ore Body including development rock stockpiles, a heap leach stockpile, additional conveyance route infrastructure, additional power distribution infrastructure, an expanded compactible-soil borrow source, and additional stormwater management facilities, in addition to the open pit itself. The proposed action, as originally proposed by the Applicant, involves the discharge of dredged or fill material into 93.5 acres of waters of the United States under Section 404 of the Clean Water Act. As such, a Department of the Army (DA) permit under the Regulatory Program is required for the proposed action.

I. Background

A complete application for a DA permit under Section 404 of the Clean Water Act for the proposed action was received on January 2, 2015. The U.S. Army Corps of Engineers, Los Angeles District (Corps) determined an EIS would be prepared. Scoping for the EIS began on January 5, 2015 with publication of a Notice of Intent to Prepare an EIS in the *Federal Register* (Volume 80, No. 2, Monday, January 5, 2015, page 212). The Corps issued a public notice for scoping on January 6, 2015. A public scoping meeting was held on February 4, 2015 at the Manor House Convention Center, Safford, Arizona. The Environmental Protection Agency agreed to be a cooperating agency for the preparation of the EIS.

In June 2016, an EIS was issued by the Corps for a 45-day review period. A Notice of Availability was published in the *Federal Register* on June 19, 2016 (Volume 81, No. 112, Friday, June 10, 2016, Page 37592). A public notice for the draft EIS was issued on June 10,

2016. A public meeting was held on June 28, 2016. During the draft EIS public review period, 117 comments from ten sources were received.

The Corps issued a final EIS in April 2017. A Notice of Availability was published in the *Federal Register* on April 21, 2017 (Volume 82, No. 76, April 21, 2017, page 18759). A public notice announcing the availability of the final EIS was issued April 14, 2017.

II. Project Purpose and Need

a. Purpose: The purpose of this proposed project is the construction of mining facilities that will allow continued mining at the Safford Mine through the development of the mineral resources associated with the Lone Star ore body using conventional open-pit mining and heap leaching techniques to produce copper, while utilizing as much of the existing Safford Mine facilities as practicable.

b. Need: FMSI is currently operating a copper mining and extraction operation at the Safford Mine Facility that is focused on the Dos Pobres and San Juan ore deposits. Because the Dos Pobres and San Juan pits are nearing the end of their anticipated life-of-mine timeframe, and because FMSI has identified and evaluated the additional ore resources of the Lone Star ore body in close proximity to current operations, FMSI has a need for new mine facilities that would allow operations to shift seamlessly from the diminishing ore resources to the new ore resource.

III. Alternatives Considered

a. Alternative 1 (Proposed Action; Base Case): Alternative 1 is the Applicant's preferred alternative and is composed of the heap leach pad, development rock stockpiles, and conveyance route, plus additional infrastructure. Total surface disturbance would be approximately 6,200 acres. Direct impacts to waters of the U.S. from implementation of this alternative would total approximately 93.5 acres.

Alternative 1 would include developing a new open pit to allow FMSI to recover approximately 785 million tons of leachable copper ore over a period of approximately 27 years. The surface footprint of the pit would be approximately 645 acres and has an estimated maximum depth of 2,000 feet. Through time, a pit lake is expected to develop in the Lone Star Pit after mining is completed.

A 1-billion-ton lined heap leach pad would be constructed southwest of the existing heap leach pad access. The heap leach pad would be constructed to achieve a final overall slope of no greater than 2.5 feet horizontal to 1 foot vertical. The final design height of the heap leach pad would be 400 feet, with an overall design footprint of approximately 2,509 acres. The heap leach pad would be constructed with a liner system to contain fluids such as the pregnant leach solution (PLS) from the leach process and precipitation falling on the pad, while keeping precipitation and stormwater away from the pad using berms and diversion channels.

Three development rock stockpiles would be constructed around the Lone Star Pit to the northeast, southeast, and southwest. The overall footprint of the three stockpiles would be approximately 2,611 acres. The combined capacity of the three stockpiles is approximately 1.7 billion tons.

A haul road surfaced with run-of-mine materials would be constructed from the main haul road east and south of the existing heap leach pad to transport construction materials from the Lone Star Pit. Two 62-acre-foot lined Process Solution Impoundments (PSIs) and two lined Non-Stormwater Impoundments (NSIs) would be constructed at the southeast corner of the new heap leach pad. The containment pond would be designed to impound stormwater runoff from the heap leach pad during a 100-year/24-hour storm event.

A lined raffinate ¹delivery pipe corridor would be constructed to recycle barren solution from the existing raffinate storage tanks after processing to the new heap leach pad, a lined PLS collection pipe corridor would be constructed to transport solution from the new PSIs to the existing processing facilities. A laydown yard for the storage of construction equipment, materials, and operating supplies would be located immediately adjacent to the PSIs and NSIs, southwest of the new heap leach pad.

The existing overland conveyor on the west edge of the existing heap leach pad would be extended to the southwest, along the southeastern edge of the new heap leach pad. The lined overland conveyor would bring leach materials from the existing crushing facility and drum agglomerators ²to the new heap leach pad, where the material would be stacked using portable conveyors and a radial stacking system.

Roads for the movement of large equipment would be located on either side of the overland conveyor and along the northeastern and southeastern edges of the new heap leach pad. Light equipment roads would be located on the southwestern and northwestern edges of the heap leach pad. Although new crossings of the existing access road would be required for the haul road and overland conveyor corridor, the existing security gate and access road to the mine administration buildings would be utilized under this alternative.

Development of this alternative would necessitate the construction of three diversions to manage stormwater near the heap leach pad. Stormwater would be diverted northwest into a tributary of Butler Wash and east to a tributary of Talley Wash. The Proposed Action would continue the use of many existing ore processing facilities, the majority of the infrastructure for the current heap leach pad, and the mine access road. New power distribution infrastructure required for the Proposed Action would consist of a transmission line from the existing 69-kilovolt powerline to the Lone Star Pit.

¹ Raffinate is the acidic solution that is applied to the heap leach pile, percolates through the pile, and dissolves copper minerals contained in the rock. The copper-laden fluid is called pregnant leach solution (PLS). Once the copper is removed from the PLS, it becomes raffinate again and is reused.

² Agglomeration is a process where crushed ore fines are converted into more uniform-sized particles to allow for more efficient percolation of the leaching solution through the leach pile.

The Applicant proposes the expansion of the existing clay borrow pit within the project area by approximately 48 acres, for a total footprint of approximately 144 acres. A soil and growth medium stockpile area of approximately 86 acres would be located immediately south of the clay borrow pit. Access to the clay borrow pit would be from the existing Clay Haul road.

Additional stormwater management facilities required by the proposed project elements include stormwater containment dams downgradient of the development rock stockpiles. Other structures to be constructed include a communications tower with an access road.

To compensate for the loss of aquatic resources associated with construction of this alternative, permittee-responsible mitigation would be implemented at the Emery Site, a 158-acre site on the Gila River downstream from the project area.

Direct impacts to waters of the U.S. from implementation of this alternative would total approximately 93.5 acres.

b. Alternative 2 (Pivot Option): Alternative 2 would utilize all of the same project components as the Base Case, with the exception of the heap leach stockpile. The design of the heap leach stockpile would be similar; however, the stockpile footprint would be rotated compared to the Proposed Action to maximize avoidance of waters of the U.S. With the different layout of the heap leach pad, there would be differences in the layout and design of the diversions that would intercept stormwater upgradient of the pad. The overall design footprint of the heap leach pad would be approximately 2,599 acres; 90 acres larger than under the Proposed Action. As with the Proposed Action, Alternative 2 is composed of the heap leach pad, development rock stockpiles, and conveyance route, plus additional infrastructure and the total surface disturbance would be 6,289.25 acres. Impacts to waters of the U.S. from implementation of Alternative 2 would be approximately 77.36 acres. Compensatory permittee-responsible mitigation would be implemented at the Emery Site.

c. No Action Alternative (no permit issued): Under the No Action Alternative, the Corps would not issue a Section 404 permit for Lone Star operations and none of the proposed mine construction, operations, reclamation, or committed compensatory mitigation activities would occur. Under this scenario, FMSI would not be issued a permit to fill waters of the U.S. associated with mining the Lone Star ore body. Following completion of mining the Dos Pobres and San Juan pits, some existing structures would remain in place following reclamation. Remaining structures would include the closed and revegetated leach pad, development rock stockpiles, selected roads, the mine pits, fencing, and the stormwater diversions.

d. Environmentally Preferred Alternative: The “environmentally preferable alternative” is the alternative that would most closely fulfill the national environmental policy found in Section 101 of NEPA. Essentially, it is the alternative that would cause the least damage to the biological and physical environment; it also means the alternative that would best protect, preserve, and enhance historic, cultural, and natural resources. Absent

any consideration of the ability of alternatives to achieve the purpose and need of the proposed project, the environmentally preferable alternative is the No Action Alternative. Each of the action alternatives would result in significant environmental and social impacts.

IV. Comments on the Final Environmental Impact Statement

The final EIS, Appendix C contains the comments received on the draft EIS and the responses provided by the Corps. Comments on the final EIS were received from six different parties. Those comments and the Corps's responses are summarized below. The comment letters/emails are available in their entirety in the Administrative Record.

1. Environmental Protection Agency, Region 9 (EPA)

- a. **Compensatory Mitigation.** This agency has provided comments on the compensatory mitigation plan and, while acknowledging revisions to this plan, repeated comments provided previously to the Corps regarding the functional assessment methodology and efficacy of the mitigation plan.

Corps Response: Based on comments received on the draft EIS from EPA, the Corps reviewed the mitigation plan and made adjustments where possible to address some of their concerns. However, the Corps has continued to follow South Pacific Division's 12501 Standard Operating Procedure for Determination of Mitigation Ratios to determine adequate compensatory mitigation for project impacts. Because there is no accepted quantitative functional assessment methodology available for use with aquatic resources in Arizona, the Corps continues to use the qualitative methodology contained within the abovementioned mitigation procedure. Other comments offered by EPA with respect to mitigation have been previously submitted for consideration by the Corps during scoping and in response to the draft EIS, and the Corps has provided appropriate responses.

- b. **Water Resources.** EPA has commented on the Rotational Fallowing Program (RFP) and made recommendations for similar situations in the future. These recommendations focused on consideration of seasonal flow dynamics rather than annual average flows. The Rotational Fallowing Program provides a means for countering the effects of groundwater pumping for mine operations. Based on the results of regular modeling of elevations, farmlands in the program can be fallowed to leave unpumped water in the aquifer, thus accounting for pumping by the mine and maintaining base flows in the Gila River. Also, EPA recommends the Applicant collaborate with the Bureau of Land Management (BLM) regarding issues of channel stability (Talley Wash), flow monitoring, and aquatic wildlife habitat management.

Corps Response: The RFP does consider the dynamics between river hydrology and agricultural/industrial pumping, as well as the seasonal dynamics of Gila River flows. The benefit to the Gila River from reduced agricultural

consumptive use occurs throughout the growing season during periods of normally reduced or intermittent flow conditions, the period of highest seasonal water demand and greatest potential environmental stress to riparian systems found along the Gila River. The Applicant has indicated a willingness to continue to partner with the BLM on local land management issues.

- c. Heap Leach Oversizing. The agency commented on the sizing of the heap leach pad, indicating the facility may be oversized and unnecessarily impacting more waters of the U.S. than needed.

Corps Response: During the development of the nine heap leach pad alternatives described in the 404(b)(1) Alternatives Analysis, the Applicant attempted to develop a design that was both practicable and minimized impacts to waters of the U.S. The estimate of the currently identified mineral resource is based on extensive sampling and evaluation undertaken to define the ore body and represents the best available information on the ore body. More detailed information, which can be generated only from future mining activities, may increase or decrease the amount of recoverable ore, or change the predicted ore/non-ore balance of materials within the projected pit. The heap leach footprints were designed to account for this inherent uncertainty and provide an acceptable operational envelope that also minimizes impacts to waters of the U.S.

As described in the 404(b)(1) Alternatives Analysis, and as stated in the response to the same EPA comment on the draft EIS, the heap leach pad will be constructed in multiple phases over the 25+ year life of ore addition to the leach pad.

- d. Sustainable Operating Procedures to Reduce Air Emissions. The agency commented that some specific greenhouse gas reduction practices mentioned in the final EIS should be incorporated as environmental commitments by the Applicant.

Corps Response: The Corps's position on this issue is to encourage the Applicant to incorporate these measures into the operation of the project. However, the Corps does not have the authority to require the Applicant to incorporate these measures as environmental commitments (or to enforce those measures) or impose the measures as mitigation considering the lack of emissions thresholds for gauging greenhouse gas emissions.

2. Arizona Game & Fish Department

- a. A general comment was provided on the subject of state authority and the agency's request for compensatory mitigation for upland wildlife habitat in addition to mitigation required for impacts to aquatic resources. A specific

comment was also provided on this subject that also refers to “Habimap Arizona” data.

Corps Response: This issue was highlighted by this agency in comments on the draft EIS and the Corps has already provided a detailed response in the final EIS, concluding that mitigation for the loss of upland wildlife habitat is not appropriate in this situation. The Corps does not regulate upland areas and thus cannot require mitigation for such areas. The State of Arizona does not have existing laws or regulations that make such a requirement. The scope of the federal government’s responsibilities do not extend to placing requirements on a permittee for compensatory mitigation that has no basis in federal, state, local, or tribal regulations.

- b. The Department commented on the need for drain-down modeling as part of closure and post-closure strategies for the heap leach pad.

Corps response: This issue was highlighted by the Department in comments on the draft EIS and the Corps has previously provided a response in the final EIS. The Corps does not agree with the Department’s assertion that draindown modeling is required at the present time and should be included in the final EIS. Closure and post-closure requirements, including draindown modeling, will be determined by ADEQ at the time a final closure plan is prepared as required under the Aquifer Protection Permit (APP) Program, which will be based on the final size and configuration of the heap leach pad. At the present time, conceptual closure and post-closure plans have been provided to ADEQ as part of APP requirements and are described in the final EIS.

- c. The Department commented on issues related to incorrect information in the final EIS regarding bighorn sheep and insufficient mitigation.

Corps response: The following response was provided by the Applicant and the Corps concurs with the information provided:

Specific measures to lessen potential impacts to bighorn sheep and deer are included as design elements of the action alternatives, rather than as mitigation measures. These measures are included in Chapter 2 of the final EIS and include such elements as training of operators to monitor the mining and process areas for the presence of larger wildlife and lowering of speed limits to minimize wildlife vehicle collisions.

Populations of bighorn sheep are expected to exist in close proximity to the Lone Star open pit. Safford Operations mine and processing personnel have significant experience dealing with populations of bighorn sheep on or near mine operations. The Freeport-McMoRan Morenci Mine Operation, with the assistance of Safford Operations employees, has worked with the Arizona Game and Fish Department for over a decade to use the very successful Morenci

bighorn sheep herd to enhance viability and success across the state by capturing portions of the Morenci herd and relocating to other parts of the state of Arizona where bighorn sheep populations are struggling or are being established. Safford Operations would anticipate continuing to work closely with the Arizona Game and Fish Department regarding bighorn sheep management.

It is important to note that local bighorn sheep populations have not been adversely affected by current active mining operations at Safford and Morenci and the mines have become “refugia” for these populations. The Corps concludes that the proposed project will not eliminate bighorn sheep habitat connectivity between the Gila Mountains and Bonita Creek Canyon. Development of the Lone Star Project is not expected to inhibit bighorn sheep movements between these areas.

- d. The Department commented on the lack of mitigation related to the loss of stock tanks.

Corps Response: As stated in the final EIS, compensatory mitigation will be required of the Applicant to address the loss of aquatic functions and values from construction and operation of this project. None of the stock watering points on this site are considered waters of the U.S., and no compensatory mitigation has been proposed for this reason. As indicated in the final EIS, the permittee will continue to coordinate with the Department’s local wildlife specialist regarding wildlife management issues at the mine and opportunities for habitat enhancement.

3. Joe Sparks (representing San Carlos Apache Tribe).

- a. The final EIS does not address impacts on the San Carlos Apache Reservation.

Corps Response: The final EIS evaluates the impacts associated with issuance of a 404 permit for the proposed activities at the Safford Mine location. The San Carlos Apache Tribe reservation is located approximately 8 miles north of the project site and approximately 15 miles downriver along the Gila River. A scope of analysis was established by the Corps to frame the final EIS analysis and scoping activities were conducted to solicit input from interested agencies, tribes, and members of the public, including the San Carlos Apache Tribe. No substantive response was received from the San Carlos Apache Tribe in response to scoping or to the publicly circulated draft EIS. In addition, the Corps has consulted with the Tribe on cultural resources issues as part of the Section 106 process. Although the San Carlos Reservation is not specifically called out in the final EIS, the document fully analyzes the environmental consequences of issuing a 404 permit to the Applicant, including effects to water resources that are relevant to the Reservation downstream from the project on the Gila River.

- b. A number of comments were made regarding the Global Equity Decree; specifically, that the project may violate the Decree, that “severance and transfer” may be required, and that the Tribe’s rights under the decree may be violated with respect to the Applicant’s proposed use of water resources for this project. The comments received addressed groundwater impacts within the context of perceived water rights issues only.

Corps Response: Issues regarding water rights were considered outside of the scope of analysis for the final EIS and were not addressed. In this situation, the permittee would be withdrawing groundwater from aquifers that are not hydrologically connected to the Gila River “impact zone, which is the subflow area that is the subject of the consent decree. The final EIS provides information regarding the nature of surface water and groundwater resources in the project area and the effects the project alternatives would have on these resources. There would be no impacts to groundwater resources associated with the San Carlos Apache Tribe.

- c. Water quality must be adequately protected and flood frequency estimates revisited.

Corps Response: The final EIS fully evaluates potential effects to surface water and groundwater quality. The potential for adverse effects would be minimized through the Applicant’s adherence to regulatory requirements for an aquifer protection permit; spill prevention, control, and counter-measures plan; and stormwater pollution prevention plan. The Applicant will establish a zero-discharge area as a means of managing water quality and runoff. The Applicant is also required by ADEQ, through the APP program to demonstrate compliance with aquifer water quality standards measured at a designated point of compliance. These regulatory requirements will adequately minimize the potential for water quality impacts.

The process solution containment facilities at the Safford Mine have been very conservatively designed and exceed regulatory requirements. For instance, containment volumes for the leach pad were calculated assuming runoff from the 100-yr/24-hr storm and process solution draindown during a 24-hour power outage occurred concurrently, even though on-site backup generators would allow process solutions to continue to be recirculated to the leach pad.

Additionally, surface water diversions that will direct storm water away from the mine facilities have been designed to protect against the 100-year, 24-hour storm event. Retention dams will be constructed to similar standards as the dams successfully used for the Dos Pobres/San Juan operations.

- d. The cumulative analysis should address the future use of water for mining/processing sulfide-based ore.

Corps Response: Development of the sulfide ore resources has not yet been determined by the Applicant to be economically feasible, and any attempt to analyze the impacts of potential future sulfide development prior to completion of necessary technical and economic studies would be purely speculative.

- e. The discussion of groundwater hydrology is inadequate.

Corps Response: The Lower Basin Fill (LBF) Aquifer between the mine and the Gila River consists of basin fill separated by the thick clay unit of the Upper Basin Fill. This clay unit acts to isolate the impacts from pumping the LBF Aquifer such that impacts to the Gila River and shallow groundwater in the alluvium of the Holocene Fill adjacent to the river will be so small as to be unmeasurable. Extensive fieldwork has provided a sound foundation for the modeling described in the final EIS, which has been in use and regularly updated/recalibrated with field data since the Dos Pobres/San Juan operations at this location commenced. The modeling does not indicate that pumping the LBF will physically or hydrologically change the shallow aquifer in the Holocene Fill. The Graben Aquifer is even more isolated from the Gila River than the LBF Aquifer; the Butte Fault provides this isolation between the two aquifers.

- 4. Kyle Kingsbury. This individual represents Brigham Young University, a majority owner of a group of claims known as the Horseshoe Claims. The commentor took exception with statements in the final EIS regarding descriptions of the Horseshoe Claims and whether they contain developable minerals that can be mined in the future. In addition, the commentor indicated the final EIS should consider mining on the Horseshoe Claims. Lastly, the commentor noted several environmental effects from the Lone Star project that, in his opinion, could affect mining on the Horseshoe Claims.

Corps Response: The Corps considered the Horseshoe and Melody Claims as part of the past, present, and reasonably foreseeable future actions that were part of the cumulative analysis in the final EIS. In the case of both the Horseshoe and Melody Claims, the presence of these claim areas within the project area were considered to the degree that information was known about these areas. No information on potential mining activities was available and none was offered during scoping activities regarding any plans to mine within these areas. Thus, any consideration of potential impacts to mining activities in these areas was considered too speculative to evaluate in a meaningful way.

The final EIS identified potential environmental effects, including some that could affect the two claim areas; however, the lack of any kind of mining plan for these locations precludes any meaningful analysis. For example, the final EIS documents a decline in groundwater elevation in the vicinity of the Horseshoe Claims; however, because there is no information available regarding plans to engage in mineral

extraction at this location, there is nothing more to conclude with respect to groundwater changes from the project. The environmental effects to the affected environment have been fully described in the final EIS to the extent they can be using available information. To attempt to analyze the effects on the project on potential future mining activities on the claim sites would be speculative.

5. Michael Betom. This individual commented on his concerns regarding water quality effects to San Carlos Lake, downstream from the project site.

Corps Response: Potential effects to surface water quality are discussed in the final EIS. The final EIS analyzed potential effects to water quality, which includes increased sediment loads and increased risk of accidental releases of hazardous materials reaching surface water resources. These effects would be minimized through implementation of the requirements of the Aquifer Protection Permit (APP), Stormwater Pollution Prevention Plan (SWPPP), and the Spill Prevention, Control, and Countermeasure (SPCC) Plan. The “zero-discharge” areas would avoid potential impacts to surface water quality from ore processing by preventing flows to surface waters.

6. Eben Robinson. This comment was generally supportive of the project and the analysis in the final EIS. No response is needed.

V. Consideration of Applicable Laws, Regulations, Executive Orders and Policies

a. National Environmental Policy Act (NEPA): Upon receipt of the 404 permit application and subsequent initial review, the Corps determined that an EIS should be prepared to meet the requirements of NEPA. The EIS process has been completed.

b. Section 401 of the Clean Water Act Section 401 of the CWA: The proposed project is in compliance with the Section 401 of the CWA. The Water Quality Certificate/Waiver (WQC/W) was received on March 6, 2017 and is included as an attachment to the permit document. Pursuant to 33 U.S.C. 1341(d), special conditions of the Section 401 WQC/W are special conditions of the DA permit and are included in the permit document.

c. Endangered Species Act of 1973: The proposed project is in compliance with the Endangered Species Act. On January 9, 2017, the Corps initiated consultation/conference with the U.S. Fish and Wildlife Service (USFWS) with respect to southwestern willow flycatcher (*Empidonax traillii extimus*) and western yellow-billed cuckoo (*Coccyzus americanus*) and critical habitat (designated and proposed respectively) for the two species. The Corps’ effect determinations were that the project may affect, but is not likely to adversely affect either species and is not likely to adversely modify designated or proposed critical habitats. The USFWS issued a Biological Opinion on September 12, 2017 (No. 02EAAZ00-2017-F-0482). With respect to the southwestern willow flycatcher, the USFWS determined that the action, as proposed, is neither likely to jeopardize the continued existence of the species, nor likely to destroy or adversely modify critical habitat for the species. With

respect to the western yellow-billed cuckoo (WYBC), the USFWS determined that the action, as proposed, is neither likely to jeopardize the continued existence of the WYBC, nor, in conference, likely to destroy or adversely modify proposed critical habitat for the species. The Biological Opinion included an incidental take statement with terms and conditions to minimize take of listed species. These terms and conditions are incorporated into the Corps permit decision.

d. Fish and Wildlife Coordination Act: The project is in compliance with the Fish and Wildlife Coordination Act. The Corps coordinated directly with both USFWS and the Arizona Game and Fish Department during scoping and throughout the NEPA and Endangered Species Act Section 7 consultation processes.

e. Magnuson-Stevens Fishery Conservation and Management Act: The MSFCMA is not applicable to the proposed project because there is no Essential Fish Habitat present.

f. Section 106 of the National Historic Preservation Act: The proposed project is in compliance with Section 106 of the National Historic Preservation Act. The Corps consulted with the State Historic Preservation Officer (SHPO) and Native American tribes regarding effects to four historic properties eligible for listing on the National Register of Historic Places and one potentially eligible property that requires further evaluation. One of these sites is a historic-era site and the other three are prehistoric. A memorandum of agreement (“Memorandum of Agreement among U.S. Army Corps Of Engineers, Los Angeles District And the Arizona State Historic Preservation Officer Regarding the Proposed Lone Star Ore Body Development Project, Graham County, Arizona”) has been executed regarding implementation of a historic properties treatment plan that will mitigate adverse effects to these properties. The SHPO and the Corps are signatories on the MOA; the permittee is a concurring party.

g. Section 176(C) of the Clean Air Act (CAA) General Conformity Rule Review: The proposed Project is not located in a nonattainment or maintenance area; therefore, a general conformity analysis is not required.

h. Executive Order 11998: Floodplain Management: Executive Order 11988 requires federal agencies to prepare floodplain assessments for proposed actions located in or affecting floodplains. If an agency proposes to conduct an action in a floodplain, it must consider alternatives to avoid adverse effects and incompatible development in the floodplain. If the only practicable alternative involves siting in a floodplain, the agency must minimize potential harm to or in the floodplain and explain why the action is proposed there. The proposed project would not affect floodplains and is in compliance with this Executive Order.

i. Executive Order 11990: Protection of Wetlands: Executive Order 11990 requires federal agencies to prepare wetland assessments for proposed actions located in or affecting wetlands. Agencies must avoid undertaking new construction in wetlands unless no practicable alternative is available and the proposed action includes all practicable measures to minimize harm to wetlands. The proposed project would not affect wetlands.

j. Executive Order 13175: Consultation with Indian Tribes, Alaska Natives, and Native Hawaiians: The Corps has consulted with Native American tribes regarding historic properties traditional cultural properties present on the project site and afforded tribes the opportunity to continue to participate in implementation of mitigation. During the initial scoping for the project, a copy of the public notice was distributed to each of the tribes with cultural affiliation to lands in Arizona. Responses were received from the White Mountain Apache Tribe (WMAT), Navajo Nation, and the San Carlos Apache Tribe (SCAT). A tribal consultation letter, which included copies of cultural resources documentation for the project site, was distributed to the following tribes with local cultural affiliation: Ak Chin Indian Community, Gila River Indian Community (GRIC), Hopi Tribe, San Carlos Apache Tribe (SCAT), Salt River Pima-Maricopa Indian Community, Tohono Od’ham Nation (TON), and WMAT. Responses to the tribal consultation letter were received from GRIC and SCAT. The MOA and historic properties treatment plan were distributed to the following tribes with an invitation to participate in the MOA as concurring parties: Fort McDowell Yavapai Nation, GRIC, Hopi Tribe, SCAT, TON, and SCAT. Responses to this invitation were received from GRIC, Hopi Tribe, SCAT, and WMAT. None of the tribes elected to participate as a concurring party. The proposed project is in compliance with this Executive Order.

k. Environmental Justice (Title VI of the Civil Rights Act and Executive Order 12898): The proposed action is not expected to negatively impact any community, and therefore is not expected to cause disproportionately high and adverse impacts to minority or low-income communities. An analysis of environmental justice issues is provided in Section 3.17 of the environmental impact statement. No disproportionate impacts to minority or low-income populations would occur.

VI. Consideration of Mitigation Measures

The final EIS described a number of “environmental protection measures”, which are standards and practices the Applicant has committed to in order to limit the potential for adverse environmental impacts related construction and operation of the proposed project. These measures have been incorporated into the alternative descriptions.

The final EIS also describes compensatory mitigation that is required to compensate for the loss of aquatic functions and values that would result from project implementation. Compensatory mitigation was developed by the Applicant in consultation with the Corps and will be required as a special condition for the 404 permit.

Lastly, the final EIS describes several potential mitigation measures that could be implemented to further reduce environmental impacts. These mitigation measures are listed below and a discussion of their relevance follows each measure.

- a. *If Alternative 1 is selected, FMSI should conduct a hydrologic and engineering study to identify relevant protections to the existing substation on Talley Wash downstream*

of Safford Bryce Road during a 500-year storm flow event on Talley Wash considering the new stormwater diversions and implement any recommendations of the study.

Because Alternative 1 (Base Case) is not the Least Environmentally Damaging Practicable and a 404 permit cannot be issued for that alternative, this mitigation measure is no longer relevant.

- b. During activities at the Emery Mitigation site, avoid clearing access routes within suitable southwestern willow flycatcher and the western yellow-billed cuckoo habitat and during the nesting season for these species (approximately April 15 to September 30).*

The permittee will be required to implement conservation measures listed in the Biological Opinion, which take this measure into account. Compliance with the terms and conditions to minimize take authorized by the Biological Opinion will be required as a special condition for the 404 permit.

- c. To minimize adverse impacts to the southwestern willow flycatcher and the western yellow-billed cuckoo from vegetation treatments [tamarisk management and riparian plantings], implement the conservation measures listed by the USFWS in the Biological Opinion for the Upper Gila River Vegetation Management Project (USFWS 2015f) such as conducting nesting surveys, and implementing appropriate protection buffer distances for herbicide application and in-stream work.*

The permittee will be required to implement mandatory terms and conditions to implement the reasonable and prudent measures associated with the biological opinion issued for the Lone Star project as a special condition for the 404 permit. These requirements supersede this recommended mitigation measure, which was suggested prior to issuance of the current Biological Opinion

- d. The Corps has made a determination of adverse effect to historic properties based on the presence of NRHP-eligible cultural resources within the APE. To resolve these effects, a Historic Properties Treatment Plan has been developed that specifies measures to avoid, minimize, or mitigate adverse effects at each historic property. Additionally, a Memorandum of Agreement will be executed among the consulting parties to ensure that the Historic Properties Treatment Plan is fully implemented.*

The Corps will require the Applicant to participate in the memorandum of agreement executed for this undertaking to ensure the historic properties treatment plan is fully implemented. This will be required as a special condition for the 404 permit.

As mentioned by the Environmental Protection Agency (Section IV above), there are four suggested measures listed in the final EIS that could be used to reduce greenhouse gas emissions:

- Use conveyors rather than trucks for transporting ore to processing areas and the heap leach facility,
- Incorporate alternative energy components such as onsite solar power generation,
- Offer ride-sharing or shuttle opportunities for mine employees commuting to the site, and
- Use high efficiency diesel particulate filters on diesel engines to reduce black carbon emissions.

The Corps’s position on this issue is to encourage the Applicant to incorporate these measures into the operation of the project. However, the Corps does not have the authority to require the Applicant to incorporate these measures as environmental commitments or impose and enforce the measures as mitigation. Also, there is a lack of emissions thresholds for gauging greenhouse gas emissions and a lack of certainty that these measures would be an effective use of resources by the applicant. The applicant has indicated they will implement them if they are determined to be practical and feasible.

VII: Compliance with 404(b)(1) Guidelines

Based on the discussion in Appendix A of the final EIS are there available, practicable alternatives having less adverse impact on the aquatic ecosystem and without other significant adverse environmental consequences that do not involve discharges into “waters of the U.S.” or at other locations within these waters?

Yes ___ No X

If the project is in a special aquatic site and is not water dependent, has the applicant clearly demonstrated that there are no practicable alternative sites available? Not applicable.

Yes ___ No ___

Will the discharge:

Violate state water quality standards?

Yes ___ No X

Violate toxic effluent standards under Section 307 of the Clean Water Act?

Yes ___ No X

Jeopardize endangered or threatened species or their critical habitat?

Yes ___ No X

Violate standards set by the Department of Commerce to protect marine sanctuaries?

Not applicable.

Yes ___ No ___

Evaluation of the information above indicates that the proposed discharge material meets testing exclusion criteria for the following reason(s):

based on the above information, the material is not a carrier of contaminants.

the levels of contaminants are substantially similar at the extraction and disposal sites and the discharge is not likely to result in degradation of the disposal site and pollutants will not be transported to less contaminated areas.

acceptable constraints are available and will be implemented to reduce contamination to acceptable levels within the disposal site and prevent contaminants from being transported beyond the boundaries of the disposal site.

Will the discharge contribute to significant degradation of “waters of the U.S.” through adverse impacts to:

Human health or welfare, through pollution of municipal water supplies, fish, shellfish, wildlife and/or special aquatic sites?

Yes ___ No

Life stages of aquatic life and/or wildlife?

Yes ___ No

Diversity, productivity, and stability of the aquatic life and other wildlife? Or wildlife habitat or loss of the capacity of wetlands to assimilate nutrients, purify water or reduce wave energy?

Yes ___ No

Recreational, aesthetic and economic values?

Yes ___ No

Will all appropriate and practicable steps be taken to minimize adverse impacts of the discharge on the aquatic ecosystem? Does the proposal include satisfactory compensatory mitigation for losses of aquatic resources?

Yes No ___

VIII. Public Interest Review

a. The relative extent of the public and private need for the proposed work has been considered: The Applicant’s proposal to mine copper resources is intended to profitably contribute to meeting global copper demand. . Because the Applicant is a private business, the project will meet their profit motive and generate revenue that will support short and long term employment and tax revenue at the local, state, and federal level.

The following public interest factors were taken into account and both cumulative and secondary impacts were considered (Table 1). Further discussion is provided for factors that will receive an effect that is not negligible.

Summary of All Public Interest Factors Considered for Alternatives:

				+ Beneficial effect
				0 Negligible effect
				- Adverse effect
				M Neutral as result of mitigation actions
				Conservation.
				Economics.
				Aesthetics.
				General environmental concerns.
				Wetlands.
				Historic properties.
				Fish and wildlife values
				Flood hazards.
				Floodplain values.
				Land use.
				Navigation.
				Shore erosion and accretion.
				Recreation.
				Water supply and conservation.
				Water quality.
				Energy needs.
				Safety.
				Food and fiber production.
				Mineral needs.
				Considerations of property ownership.
				Needs and welfare of the people.

1. Economics: The project will have a positive effect on direct and indirect economics by ensuring the continuation of the economic benefits derived from the mineral extraction activity. The mine provides metal products that are needed within the national economy and the mine provides direct and indirect benefits related to employment, local tax base, demand for housing, etc.
2. Historic Properties: The project will adversely affect 4 historic properties and one potential historic property; however, the Applicant will be required to fully mitigate the effects on these properties.

3. Fish and Wildlife Values: The project may adversely affect two federally listed species. In consultation with USFWS, conservation measures have been developed to minimize those effects. In addition, the Applicant has made environmental commitments a part of this project that will limit potential effects to fish and wildlife.
4. Water Supply and Conservation: The final EIS evaluated the potential effects of this project on water resources; in particular, potential effects to the base flows for the Gila River and Bonita Creek. As part of the environmental analysis for the Dos Pobres/San Juan project that preceded the Lone Star project, the “3M” groundwater model was developed by the U.S. Geological Survey as a means of characterizing the nature of groundwater resources in the project area, monitoring the status of groundwater, and providing a basis for mitigating any effects to groundwater that are identified by the model. The rotational fallowing mitigation developed for the previous project, and which is still in place, provides a means of ensuring continuing base flows in these watercourses are maintained at acceptable levels.
5. Water Quality: The nature of mining operations is such that there is a potential for water quality issues with respect to both surface and groundwater resources. Potential water quality issues were analyzed in the final EIS for this project. A 401 water quality certification was issued by ADEQ on March 6, 2017. The Applicant is also subject to state regulatory requirements that are specifically designed to minimize water quality impacts. An aquifer protection permit is required to minimize the potential for water quality effects to groundwater resources. A SWPPP and SPCC Plan are required to minimize impacts to surface water resources. These plans were evaluated as part of the final EIS analysis.
6. Mineral Needs: Safford Mine provides copper resources to the national and international marketplaces. Developing ore resources in the Lone Star ore body allows the Applicant to transition its mining operations from the Dos Pobres and San Juan pits to the new ore body and allow for continuous copper production without a break in the production process.
7. Needs and Welfare of the People: The project would have a beneficial effect with respect to the needs and welfare of the people. The project would provide continuing local employment and economic benefits for communities in and near Safford, AZ and allow for a continuing stream of copper to meet market demands.

b. The practicability of using reasonable alternative locations and/or methods to accomplish the objective of the proposed structure or work has been evaluated: The 404(b)(1) alternatives analysis for this project is included with the final EIS as an appendix and provides a detailed description of the geographic scope of the analysis area and consideration that were made with respect to potential alternative locations. Alternatives were identified that considered different locations, designs, and configurations for the project components. These alternatives were evaluated for practicability within the context of the permittee’s overall purpose and need for the project.

c. The extent and permanence of the beneficial and/or detrimental effects that the proposed structures or work may have on the public and private uses for which the area is suited has been reviewed: The proposed project will be implemented solely on private lands and the effects of the facilities, both beneficial and detrimental, will be permanent. The special conditions that are being imposed on the permittee are also equally permanent. The project will not affect public uses on this land as such uses do not currently exist.

IX. Special Conditions

The following special conditions will be included in the permit to ensure the project is not contrary to the public interest and complies with the 404 (b)(1) Guidelines:

1. The permittee shall comply with all requirements and conditions in the letter of state water quality certification issued by the Arizona Department of Environmental Quality dated March 6, 2017 or any modification thereof. This certification demonstrates the permittee has complied with Section 401(a) of the Clean Water Act. A copy of this certification is enclosed (Enclosure 1).
2. The permittee shall not undertake any actions that may impact National Register-eligible historical sites or potentially eligible historical sites except under the terms of the executed Memorandum of Agreement (MOA) between the Corps and Arizona SHPO titled “Memorandum of Agreement among U.S. Army Corps Of Engineers, Los Angeles District And the Arizona State Historic Preservation Officer Regarding the Proposed Lone Star Ore Body Development Project, Graham County, Arizona”, executed in July 2017. The Corps and SHPO are signatories for the MOA and the permittee is a concurring party. For the purposes of this special condition, Register-eligible or potentially eligible historical sites consist of the following: AZ CC:2:347(ASM), AZ CC:2:445(ASM), AZ CC:2:446(ASM), AZ CC:2:453(ASM), and AZ CC:1:149(ASM). A 50-foot buffer shall be established around the outer boundary of the sites. No construction activities of any kind shall be conducted within the 50-foot wide buffer zone prior to obtaining written clearance from the Corps. A qualified archaeologist shall establish in the field the outer boundary of each archaeological site and the buffer zone, and shall monitor all grading activities occurring within 100 feet of the site. The sites shall be managed in accordance with the MOA. The permittee will provide all archaeological studies and reports required by the Corps as stated in the MOA. The permittee will provide the necessary funding for all required studies and reports. The Permittee shall adhere to all conditions and requirements of the MOA.
3. This Corps permit does not authorize you to take any threatened or endangered species, in particular the southwestern willow flycatcher and western yellow-billed cuckoo or adversely modify their designated and proposed critical habitat, respectively. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g. ESA Section 10

permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply). The enclosed BO (02EAAZ00-2017-F-0482) contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BO, the terms and conditions of which are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit.

4. The permittee shall fully implement the Final Mitigation Plan for the Lone Star Ore Body Project dated August 29, 2017 (the Mitigation Plan). The permittee is solely responsible for funding of and compliance with all aspects of the Mitigation Plan.
5. Prior to and during construction activities in the vicinity of waters of the U.S., the boundaries of waters of the U.S. shall be marked by the placement of temporary construction fencing, staking, and/or signage to clearly delineate the permitted extent of impacts to waters of the U.S.
6. Unless specifically authorized, the permittee shall not stockpile material below the ordinary high water mark of any water of the U.S.
7. The permittee shall perform work within and in the vicinity of waters of the U.S. during low water conditions when the area is naturally dewatered and shall suspend all operations in these areas when there is water within the project area.
8. No debris, soil, silt, rubbish, cement or concrete washings thereof, oil or petroleum products or washings thereof shall be allowed to enter into or placed where it may be washed by rainfall or runoff into waterways.
9. Materials and staging, storage, fueling, and maintenance equipment shall be located outside of waters of the U.S. where potential spilled materials will not enter into any waterway or other body of water.
10. During construction, the permittee shall restrict vehicular traffic from entering the watercourse except for the minimum required for construction.
11. The permittee shall remove all excess fill and/or construction debris/equipment from the site immediately upon completion of construction.
12. Prior to the initiation of construction, the permittee shall ensure the contractor(s) and/or field supervisors have been provided with a copy of this permit and special

conditions. A copy of the permit and special conditions shall be maintained at the construction site.

X. Findings

a. The evaluation of the proposed action and alternatives was done in accordance with all applicable laws, executive orders, regulations, and agency regulations. The final EIS and supporting documents are adequate and contain sufficient information to make a reasoned permit decision.

b. The selected alternative is Alternative 2 (Pivot Option), and with appropriate and practicable mitigation measures to minimize environmental harm and potential adverse impacts of the discharges on the aquatic ecosystem and the human environment, the applicant's proposed project, as mitigated by these conditions, is considered the least environmentally damaging practicable alternative.

c. The discharge complies with the Section 404(b)(1) guidelines, with the inclusion of appropriate and practicable general and special conditions in the permit to minimize pollution or adverse effects to the affect ecosystem.

d. Issuance of a Department of the Army permit, with the inclusion of special conditions on the permit, as prescribed by regulations published in 33 C.F.R. Parts 320 to 332, and 40 C.F.R. Part 320 is not contrary to the public interest.

David J. Castanon, Chief
Regulatory Division