FREEPORT-McMoRan

Tyrone Operations
P.O. Box 571
Tyrone, NM 88065

September 20, 2022

Certified Mail #70150640000476263568
Return Receipt Requested

Mr. Brad Reid
New Mexico Environment Department
Ground Water Quality Bureau
P.O. Box 5469
Santa Fe, NM 87502

Dear Mr. Reid:

Re: Open Pit Highwall Risk Analysis Work Plan - Tyrone

In a letter dated September 20, 2021, the New Mexico Environment Department (NMED) renewed Discharge Permit 1341 (DP-1341). Pursuant to DP-1341 condition C110.C, 'Within one year of the effective date of this Discharge Permit (by September 20, 2022) the permittee shall submit to NMED for approval a plan to perform a risk analysis regarding possible impacts the failure of open pit highwalls could have on mine units during closure, including facilities associated with long-term water treatment.' Pursuant to DP-1341 condition C110.D, 'In order to ensure compliance with the requirements of Subparagraph (3) of 20.6.7.35.C NMAC, within one year of the effective date of this Discharge Permit (by September 20, 2022), the permittee shall provide technical information identifying how access by wildlife and unauthorized members of the public will be prevented to the open pit, reservoirs, impoundments, or sumps that will contain water at closure and that may present a hazard to public health or wildlife.' Attachments 1 and 2 address the requirements of conditions C110.C and C110.D.

After NMED approves the work plans, Tyrone will begin work within 90 days and submit the results within 270 days. If you require additional information or wish to discuss the report in more detail, please contact Mandy Lilla at (575) 912-5388.

Sincerely,

Thomas L. Shelley
Environmental Services Manager

TLS:mjl
Enclosures

20220920-100

ATTACHMENT 1
Highwall Risk Analysis

The condition reads as follows:

> ***Condition C110.C:*** *Highwall Risk Analysis*
>
> *Within one year of the effective date of this Discharge Permit (by September 20, 2022) the permittee shall submit to NMED for approval a plan to perform a risk analysis regarding possible impacts the failure of open pit highwalls could have on mine units during closure, including facilities associated with long-term water treatment. The plan shall include methods that will be used to evaluate the possible impacts to mine units during closure.*

What mine units are present at closure and what are the facilities and infrastructure at Tyrone are associated with Long-Term Water Treatment? Where are they located? What is their proximity to a highwall or pit crest?

Reclaimed stockpiles and tailing dams will exist at closure. Tyrone currently has existing reclaimed stockpiles and tailing dams. A stability analysis was performed on these facilities during Final Design phase. Tyrone is not proposing to complete any additional studies on these reclaimed facilities.

A stockpile stability analysis was performed on the operational stockpiles, located outside the open pit surface drainage area (OPDSA), and shows they meet the minimum factor of safety criteria provided in Copper Rule. This study was submitted with the 2013 Tyrone Mine Closure/Closeout Plan Update (2013 CCP).

Per Copper Rule 20.6.7.33.C.3.b, waste and leach stockpiles within an OPSDA are not required to be graded and covered. Therefore, the stockpiles within the OPSDA will not be impacted by failure of open pit highwalls.

All stockpiles and tailing dams have maintenance cost in Financial Assurance (FA). No other evaluations are required for these facilities.

The attached Table 1 lists the infrastructure that is critical to the Water Treatment, their location, if its temporary or permanent infrastructure, and if they need to be evaluated for potential impacts due to the failure of open pit highwalls.

If permanent infrastructure, that is critical to the Water Treatment, is located interior pit and less than 50ft from a highwall or less than 50ft. from the perimeter of a pit, that infrastructure will be evaluated. See Table 1 and Figure 1.

What methods will be used to evaluate possible impacts to mine units during closure?

During mining, Tyrone completes pit wall slope stability analysis (typically through a specialty contractor) to design pit walls to meet acceptable factors of safety for mining. Many factors are considered when determining the overall slope angle, including but not limited to drilling and slope monitoring information. The slope stability factors of safety of the pit walls are known based on these analyses and will be considered in the risk assessment.

Task 1 – Evaluate Risk

A risk evaluation for infrastructure listed in Table 1 with a "Y" annotated in the third column will be completed. The infrastructure will be assigned a 'high risk' or 'low risk' designation with respect to risk of being impacted by failure of open pit highwalls.

Task 2 – Mitigation Opportunities

For infrastructure categorized as 'high risk', Tyrone will list mitigation options to address the risk which can then be considered in the next CCP update.

ATTACHMENT 2
Closure Access Workplan

The condition reads as follows:

Condition C110.D: *Closure Access Workplan*

> *In order to ensure compliance with the requirements of Subparagraph (3) of 20.6.7.35.C NMAC, within one year of the effective date of this Discharge Permit (by September 20, 2022), the permittee shall provide technical information identifying how access by wildlife and unauthorized members of the public will be prevented to the open pit, reservoirs, impoundments, or sumps that will contain water at closure and that may present a hazard to public health or wildlife. The workplan shall include an evaluation of strategies to minimize or eliminate the presence of surfacing water in pits at closure that may present a hazard to public health or wildlife.*

What methods does Tyrone currently use and is proposing to use at closure to prevent wildlife and unauthorized members of the public from entering the open pits.

Although Condition 110.D is focused on post-closure activities, an examination of how Tyrone successfully prevents wildlife and unauthorized members of the public from entering the open pits, reservoirs, impoundments, and/or sumps may be instructive.

- Existing Employees (security, etc.)
- Floating barriers
- Bird Hazing and hazing devices
- Fencing and Berms

These methods are effective in preventing wildlife and unauthorized members of the public from entering the open pits, reservoirs, impoundments, and/or sumps at Tyrone Mine and will continue to be used at closure.

What are the current methods Tyrone proposed to minimize water (that is a hazard to public health or wildlife) in pits at Closure?

Subparagraph (3) of 20.6.7.35.C NMAC of the Copper Rule requires that pit water management sumps be managed to prevent wildlife and public access, not necessarily elimination of water, surface. That is because it was widely acknowledged historically that best practices for pit water management have required a minimal surface water presence. The methods proposed to accomplish this objective during closure are stated clearly in Table 4-2 of the Tyrone CCP and focus on fencing and signage, operating personnel and managing water to minimize water surfaces in pit sumps.

Tyrone also reduces water to be managed through the process solution elimination (PSE) study (DP-1341 Condition 88). This study was updated with the 2013 CCP to reflect new and more effective technology and equipment. Resulting in a faster rate of solution elimination. This minimizes the water in the pits.

The annual total water being treated at closure, see the 2013 CCP's water treatment plan, is the same as the annual water in-flow. For example, in year 15, the annual in-flow is 1,240 gpm and the annual total water treated is 1,240 gpm plus the brine reject waters. As a result, once the desired pit water elevation is obtained, the water level will remain constant with some temporary minor fluctuations due to weather. Thereby minimizing the hazardous water in the pits.

Tyrone has partially or fully backfilled pits in unique opportunities historically and currently during operations. As mining progresses, Tyrone regularly considers backfill as a waste management option during operations.

In their comments on DP 1341, Gila Resources Information Project indicates that backfilling pits with waste rock to eliminate water surfaces is a recommended practice that should be applied everywhere without citing any real experience or evidence to support or even acknowledging that there could be any issues or disadvantages or operating issues. Tyrone disagrees strongly with such sweeping assumptions but will examine this option along with other approaches outlined below.

Proposed Workplan Activities

Tyrone proposes the following tasks to further fulfill Condition C110.D.

Task 1 – Compile a List of the Pit Water Management Sumps

The first step to minimize or eliminate potential hazardous water is to identify which water sources and their locations that is likely to be a hazard to public health or wildlife. Tyrone has completed this task and this information can be found in Table 5-1 in the 2013 CCP.

Table 5-1, in the 2013 CCP, provides a list of the pit sumps, their sizes, and operating ranges as currently proposed.

Task 2 – Evaluate Options to Prevent Access

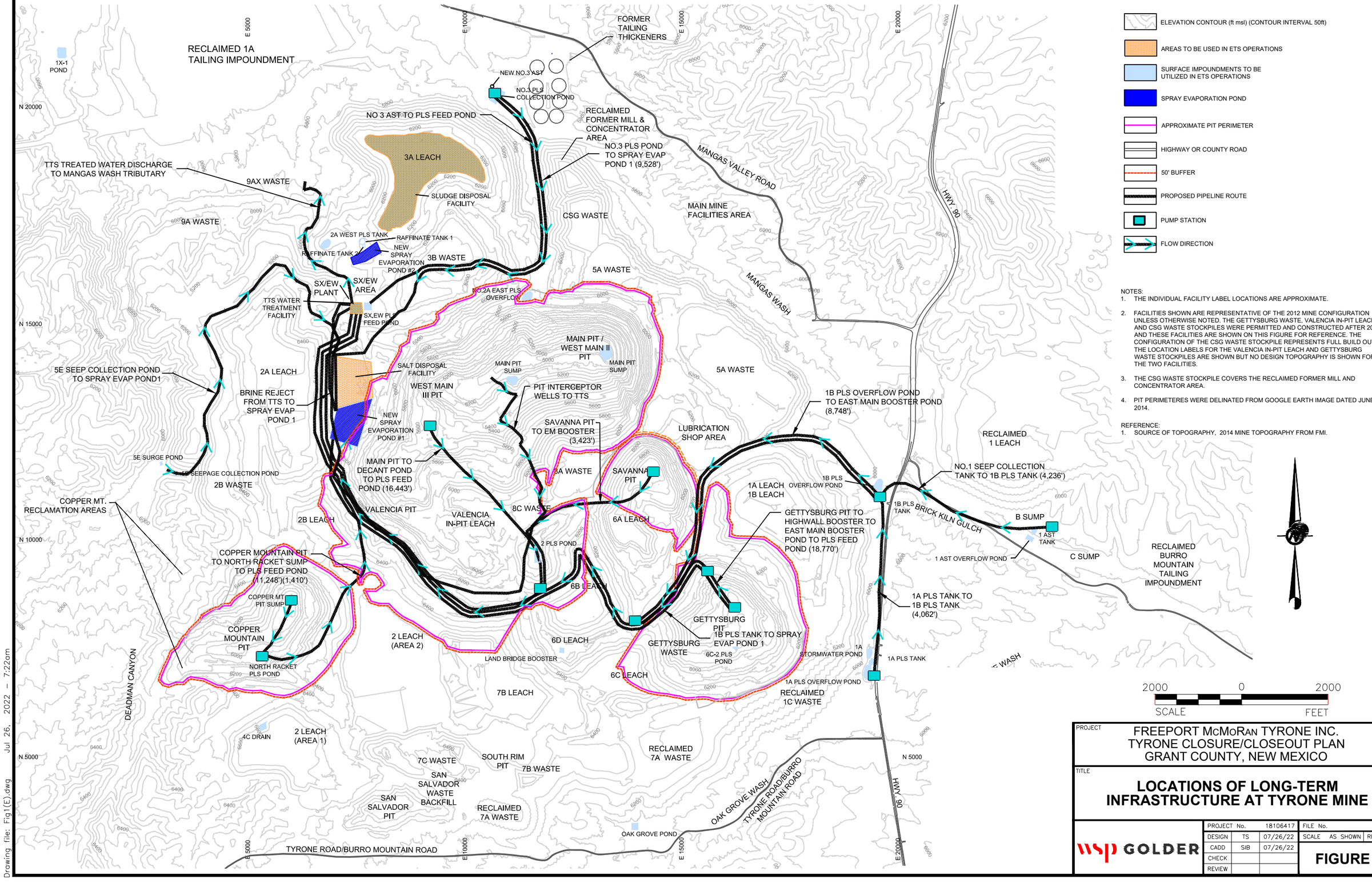
Tyrone will evaluate the following options for the sumps listed above and provide an assessment of advantages and disadvantages: Minor waste rock backfilling, floating barriers, and new technologies such as enhanced evaporation.

Tyrone is proposing to evaluate these options for their effectiveness in minimizing or eliminating water in the pits and implement options that were found effective during next CCP update.

Table 1: Critical Infrastructure		
Critical Infrastructure	**Location**	**Evaluation (Y/N) - Distance from Highwall (>=50ft = N or <50 ft. = Y)**
Permanent Pipelines		
1 AST Tank to 1B PLS Tank	Exterior to Pit	N
1 AST Tank to 1B PLS Tank	Exterior to Pit	N
1A AST Overflow Pond to 1B PLS Overflow Pond	Exterior to Pit	N
1C Stockpile Extraction System to 1A AST Overflow Pond	Exterior to Pit	N
1X1 Pond to No. 3 PLS Overflow/No. 3 AST	Exterior to Pit	N
1B PLS Overflow Pond to SX/EW PLS Feed Pond	Crest of Pit	Y
1B PLS Tank to Spray Evap Pond 1	Crest of Pit	Y
5E Seep Collection Pond to Spray Evap Pond 1	Crest of Pit	Y
Brine Reject from TTS to Spray Evap Pond 1	Crest of Pit	Y
Copper Mtn. Pit to North Racket Sump	Interior Pit	Y
Gettysburg Highwall Tank to EM Booster	Interior Pit	Y
Gettysburg Pit to Gettysburg Highwall Tank	Interior Pit	Y
Main Pit to SX/EW PLS Feed Pond	Interior Pit	Y
Pit Interceptor Wells to TTS	Interior Pit	Y
Savanna Pit to EM Booster	Interior Pit	Y
EM Booster to SX/EW PLS Feed Pond	Crest of Pit	Y
No. 1B Stockpile Seep Collection to 1B PLS Tank	Exterior to Pit	N
No. 3 PLS Collection Pond to Spray Evap Pond #1	Crest of Pit	Y

Table 1: Critical Infrastructure		
Critical Infrastructure	**Location**	**Evaluation (Y/N) - Distance from Highwall (>=50ft = N or <50 ft. = Y)**
No. 3 PLS Overflow/No. 3 AST to SX/EW PLS Feed Pond	Exterior to Pit	N
No. 3 Stockpile Canyon 10-11 to No. 3 PLS Overflow/No. 3 AST	Along Toe of No.3 Stockpile	N
No. 3 Stockpile Canyon 6 to No. 3 PLS Collection Pond	Along Toe of No.3 Stockpile	N
No. 3 Stockpile Canyon 7 to No. 3 PLS Overflow/No. 3 AST	Along Toe of No.3 Stockpile	N
No. 3 Stockpile Interceptor Trenches to No. 3 PLS Collection Pond	Along Toe of No.3 Stockpile	N
North Racket Sump to SX/EW PLS Feed Pond	Interior Pit	Y
Oak Grove Interceptor Barrier to 1 AST Tank	Exterior to Pit	N
Oak Grove Pond to 1A AST Overflow Pond	Exterior to Pit	N
Oak Grove/Brick Kiln Pumpback Systems to 1A AST Overflow Pond	Exterior to Pit	N
OGW Collection Trench to 1A AST Overflow Pond	Exterior to Pit	N
Temporary Tanks (Years 1 to 9)		
1A AST Overflow Pond	Exterior to Pit	N
4C Drain	Exterior to Pit	N
No. 3 PLS Overflow Pond	Exterior to Pit	N
Temporary Tanks (Years 1 to 14)		
2 PLS Pond	Interior Pit	
1 AST Overflow Pond	Exterior to Pit	N
1B PLS Overflow Pond	Exterior to Pit	N
2A East PLS Overflow (Pennington Pond)	Crest of Pit	N
2A West PLS Tank	Exterior to Pit	N
5E Surge Pond	Exterior to Pit	N
6C-2 PLS Pond	Interior Pit	N
Gettysburg Highwall Tank	Interior Pit	N
Land Bridge Booster	Exterior to Pit	N

Table 1: Critical Infrastructure		
Critical Infrastructure	**Location**	**Evaluation (Y/N) - Distance from Highwall (>=50ft = N or <50 ft. = Y)**
North Racket PLS Pond	Interior Pit	N
Raffinate Tank 1	Exterior to Pit	N
Raffinate Tank 2	Exterior to Pit	N
SX/EW PLS Feed Pond	Exterior to Pit	N
Permanent Tanks (Years 1 to 100)		
1X1 Pond	Exterior to Pit	N
1 AST Tank	Exterior to Pit	N
1A PLS Tank	Exterior to Pit	N
1B PLS Tank	Exterior to Pit	N
5E Seepage Collection Pond	Exterior to Pit	N
New Spray Evaporation Pond 1	Crest of Pit	Y
New Spray Evaporation Pond 2	Exterior to Pit	N
No. 3 PLS Collection Pond	Exterior to Pit	N
Oak Grove Pond	Exterior to Pit	N
Pumps	Exterior to Pit	N
	Interior Pit	Y
Powerlines	Exterior to Pit	N
	Interior Pit	Y
	Crest of Pit	Y
Permanent Water Treatment Plant		
Salt Disposal Facility	Crest of Pit	Y
Sludge Disposal Facility	Exterior to Pit	N
TTS Water Treatment Facility	Exterior to Pit	N
Stormwater Controls	Exterior to Pit	N
Roads/Railway	Exterior to Pit	N
	Interior Pit	N
	Crest of Pit	N
Wells	Exterior to Pit	N
	Interior Pit	Y


RECLAIMED 1A
TAILING IMPOUNDMENT
1X-1
POND
FORMER
TAILING
THICKENERS
NEW NO.3 AST
NO.3 PLS
COLLECTION POND
NO 3 AST TO PLS FEED POND
RECLAIMED
FORMER MILL &
CONCENTRATOR
AREA
NO.3 PLS POND
TO SPRAY EVAP
POND 1 (9,528')
MANGAS VALLEY ROAD
HWY 90
3A LEACH
SLUDGE DISPOSAL
FACILITY
TTS TREATED WATER DISCHARGE
TO MANGAS WASH TRIBUTARY
9AX WASTE
9A WASTE
CSG WASTE
MAIN MINE
FACILITIES AREA
2A WEST PLS TANK
RAFFINATE TANK 1
RAFFINATE TANK 2
NEW
SPRAY
EVAPORATION
POND #2
3B WASTE
5A WASTE
SX/EW
PLANT
SX/EW
AREA
NO.2A EAST PLS
OVERFLOW
MANGAS WASH
TTS WATER
TREATMENT
FACILITY
SX,EW PLS
FEED POND
MAIN PIT /
WEST MAIN II
PIT
MAIN PIT
SUMP
MAIN PIT
SUMP
5E SEEP COLLECTION POND
TO SPRAY EVAP POND1
2A LEACH
SALT DISPOSAL
FACILITY
WEST MAIN
III PIT
PIT INTERCEPTOR
WELLS TO TTS
5A WASTE
1B PLS OVERFLOW POND
TO EAST MAIN BOOSTER POND
(8,748')
BRINE REJECT
FROM TTS TO
SPRAY EVAP
POND 1
NEW
SPRAY
EVAPORATION
POND #1
SAVANNA PIT
TO EM BOOSTER
(3,423')
LUBRICATION
SHOP AREA
RECLAIMED
1 LEACH
5E SURGE POND
5E SEEPAGE COLLECTION POND
MAIN PIT TO
DECANT POND
TO PLS FEED
POND (16,443')
3A WASTE
SAVANNA
PIT
NO.1 SEEP COLLECTION
TANK TO 1B PLS TANK (4,236')
2B WASTE
1A LEACH
1B LEACH
1B PLS
OVERFLOW POND
1B PLS
TANK
COPPER MT.
RECLAMATION AREAS
VALENCIA PIT
VALENCIA
IN-PIT LEACH
8C WASTE
6A LEACH
GETTYSBURG PIT TO
HIGHWALL BOOSTER TO
EAST MAIN BOOSTER
POND TO PLS FEED
POND (18,770')
BRICK KILN GULCH
B SUMP
1 AST
TANK
2B LEACH
2 PLS POND
1 AST OVERFLOW POND
C SUMP
RECLAIMED
BURRO
MOUNTAIN
TAILING
IMPOUNDMENT
COPPER MOUNTAIN PIT
TO NORTH RACKET SUMP
TO PLS FEED POND
(11,248')(1,410')
6B LEACH
1A PLS TANK TO
1B PLS TANK
(4,062')
COPPER MT
PIT SUMP
COPPER
MOUNTAIN
PIT
2 LEACH
(AREA 2)
6D LEACH
GETTYSBURG
PIT
1B PLS TANK TO SPRAY
EVAP POND 1
GETTYSBURG
WASTE
6C-2 PLS
POND
1A
STORMWATER POND
1A PLS TANK
NORTH RACKET
PLS POND
LAND BRIDGE BOOSTER
6C LEACH
1A PLS OVERFLOW POND
RECLAIMED
1C WASTE
DEADMAN CANYON
7B LEACH
4C DRAIN
2 LEACH
(AREA 1)
RECLAIMED
7A WASTE
7C WASTE
SOUTH RIM
PIT
7B WASTE
SAN
SALVADOR
WASTE
BACKFILL
SAN
SALVADOR
PIT
RECLAIMED
7A WASTE
OAK GROVE WASH
TYRONE ROAD/BURRO
MOUNTAIN ROAD
OAK GROVE POND
TYRONE ROAD/BURRO MOUNTAIN ROAD
HWY 90
E 5000
E 10000
E 15000
E 20000
N 20000
N 15000
N 10000
N 5000
ELEVATION CONTOUR (ft msl) (CONTOUR INTERVAL 50ft)
AREAS TO BE USED IN ETS OPERATIONS
SURFACE IMPOUNDMENTS TO BE UTILIZED IN ETS OPERATIONS
SPRAY EVAPORATION POND
APPROXIMATE PIT PERIMETER
HIGHWAY OR COUNTY ROAD
50' BUFFER
PROPOSED PIPELINE ROUTE
PUMP STATION
FLOW DIRECTION
NOTES:
1. THE INDIVIDUAL FACILITY LABEL LOCATIONS ARE APPROXIMATE.
2. FACILITIES SHOWN ARE REPRESENTATIVE OF THE 2012 MINE CONFIGURATION UNLESS OTHERWISE NOTED. THE GETTYSBURG WASTE, VALENCIA IN-PIT LEACH, AND CSG WASTE STOCKPILES WERE PERMITTED AND CONSTRUCTED AFTER 2014 AND THESE FACILITIES ARE SHOWN ON THIS FIGURE FOR REFERENCE. THE CONFIGURATION OF THE CSG WASTE STOCKPILE REPRESENTS FULL BUILD OUT. THE LOCATION LABELS FOR THE VALENCIA IN-PIT LEACH AND GETTYSBURG WASTE STOCKPILES ARE SHOWN BUT NO DESIGN TOPOGRAPHY IS SHOWN FOR THE TWO FACILITIES.
3. THE CSG WASTE STOCKPILE COVERS THE RECLAIMED FORMER MILL AND CONCENTRATOR AREA.
4. PIT PERIMETERES WERE DELINATED FROM GOOGLE EARTH IMAGE DATED JUNE, 2014.
REFERENCE:
1. SOURCE OF TOPOGRAPHY, 2014 MINE TOPOGRAPHY FROM FMI.
2000 0 2000
SCALE FEET
PROJECT
FREEPORT McMoRan TYRONE INC.
TYRONE CLOSURE/CLOSEOUT PLAN
GRANT COUNTY, NEW MEXICO
TITLE
LOCATIONS OF LONG-TERM INFRASTRUCTURE AT TYRONE MINE
WSP GOLDEN
PROJECT No. 18106417
FILE No. Fig1
DESIGN TS 07/26/22
SCALE AS SHOWN REV. 1
CADD SIB 07/26/22
CHECK
REVIEW
FIGURE 1
Drawing file: Fig1(E).dwg Jul 26, 2022 - 7:22am