

Tables

Table 1 Summary of Closure/Closeout Related Permits

Environmental Media/ Regulatory Framework	Permit Number	Permit Name	Issuing Agency	Status as of October 2014
Air Quality ¹	298M6R4 P066R1	New Source Review (NSR) State Title V	NMED Air Quality Bureau/ EPA	Current
Drinking Water Federal SDWA	WSS 800-09	Non-Community, Non-Transient Public Water Supply	NMED	Current
Groundwater New Mexico Administrative Code 20 Chapter 6, Water Quality	DP-181	Groundwater Discharge Permit for the Continental Mine, Concentrator, Tailings, and Waste Rock Facilities	NMED	Current, Application Under Review
	DP-1056	Groundwater Discharge Permit for Hanover Mine, Fierro/Humbolt Leach Pads, SX/EW Plant, #3 Shaft Stockpile and North Overburden Stockpile	NMED	Current, Application Under Review
	DP-1403	Supplemental Discharge Permit for Closure	NMED	Current, Application Under Review
Hazardous Materials Transporter	051013 550 049VW	Hazardous Material Certificate of Registration	U.S. DOT	Current
Hazardous Waste Generator	NMD980507958	Notification of Status as Generator of Hazardous Waste	New Mexico Department of Public Safety/ EPA	Current
New Mexico Mining Act	GR002RE	Closeout Plan and Financial Assurance	MMD	Current
Operations on Land Administered by BLM (43 CFR 3809)		1993 Approved Plan of Operations and 5 subsequent amendments	BLM	Current
Surface Water Quality Federal Clean Water Act	NMR05GB66	Stormwater/ NPDES MSGP Authorization	EPA	Current
Water Rights	M-2559, M-4124, M-2575, M- 2576, M-2502, M-5092, M-2515		New Mexico Office of State Engineer	Current

¹Cobre and Chino are combined under both permits.

Table 2 Permitted Facility Summary

Permit ¹	Permit Section	Permitted Existing Facilities	Permitted Unconstructed Facilities
GR002RE 01-1	9	Main Tailings Impoundment	North Overburden Stockpile
		Magnetite Tailings Impoundment	South Overburden Stockpile
		Waste Rock Facilities (West, Buckhorn, Union Hill, East and South WRFs)	Hanover Mountain Mine (Hanover Mountain Deposit)
		Open Pit (Continental Pit)	Fierro Leach Pad
		Pipelines	Fierro Solution Extraction/Electrowinning (SX/EW) plant
		Ancillary Facilities	South Waste Rock Disposal Facility (SWRDF)
		Other Non-specified Areas (miscellaneous disturbed areas)	North Waste Rock Facility
DP-1403	I	Hanover-Empire Zinc Mine Area	Hanover Mountain Mine (Hanover Mountain Deposit)
		Pearson-Barnes Mine Area	
		Continental Pit	
		Waste Rock Piles (Waste Rock Facilities; West, Buckhorn, Union Hill, East and South WRFs)	SX/EW Plant
		Main Tailings Impoundment	Humbolt Leach Pad
		Crusher	
		No. 1 and No. 2 Mills and Concentrator Facilities	
		Underground Mining Operations	Fierro Leach Pad
		Seepage Interception Systems	
		Stormwater Detention Impoundments (Surface Impoundments)	North Waste Rock Pile
Maintenance Area			
DP-1056 (additional facilities not covered in other permits)	III	No. 3 Shaft Stockpile ²	PLS/Raffinate Pipeline from the Fierro and Humbolt Leach Pads to the Chino SX/EW plant

¹DP-181 (NMED, 2007) covers discharges from the existing facilities listed in GR002Re 01-1 and DP-1403 and does not list additional facilities

²The No. 3 Shaft Stockpile is covered under the DP-181 renewal application, submitted in 2011, as part of an effort to restructure the existing discharge permits .

Table 3 Surface Impoundment Information

Impoundment Designation	Surface Area (acres)	Mine Use	Liner	Status at EOY 2019
Collection Containment and Pumping Systems				
Blackman's Seep	0.01	Seep	HDPE	Existing
Buckhorn CF	0.11	Seep	HDPE	Removed by EOY 2019
Cement Pond and Cement Pond Interceptor Trench	NA	Seep	Concrete Dam Unlined	Removed by EOY 2019, Replaced by East WRF Containment
Decant Pond #4	0.62	Seep and Stormwater	HDPE	Existing
Grape Gulch Pond #3	0.38	Stormwater	HDPE	Existing
North Tailings Decant Pond	0.46	Stormwater	Concrete Dam Unlined	Existing
Magnetite Seepage Pond	0.2	Seep and Stormwater	HDPE	Existing
Reclaim Pond	16	Emergency Water Management, Seep and Stormwater	Concrete Dam Unlined	Existing
Surge Tank	0.18	Emergency Water Management, Seep and Stormwater	Stainless Steel	Existing
SWRF Dam 1 (181-2003-Dam 1)	0.52	Stormwater	Concrete Dam Unlined	Existing
SWRF Dam 2 (181-2003-Dam 2)	0.34	Stormwater	Concrete Dam Unlined	Existing
SWRF Dam 3 (181-2003-Dam 3)	0.84	Stormwater	Concrete Dam Unlined	Existing
Upper Creek Containment Pond 1	0.74	Seep and Stormwater	HDPE Lined	Existing
Seeps Routed to Upper Creek Containment Pond 1*				
Borehole Seep and Borehole Access Road (Vent Seep)	NA	Seep	Unlined	Existing
East Haul Road & Rock Dam Seep	NA	Seep	Unlined	Existing
Unnamed Seep	NA	Seep	Unlined	Existing
Cottonwood Seep	NA	Seep	Unlined	Existing
Seeps Routed to Decant Pond # 4				
Dam Toe Seep	NA	Seep	Unlined	Existing
East WRF Containment	NA	Seep and Stormwater	HDPE Lined	In place by EOY 2019
Estrada Seep	NA	Seep	Unlined	Existing
Magnetite Interceptor Trench	NA	Seep	Unlined	Existing
Peach Tree Spring Seep	NA	Seep	Unlined	Existing
Union Hill Adit Seep	NA	Seep	Unlined	Existing
Weber Pond	NA	Seep	Unlined	Existing
Seeps Routed to Buckhorn CF				
Buckhorn Waste Rock Facility Seeps	NA	Seep	Unlined	Removed by EOY 2019
WWRDF Inceptor Trenches (Grand Canyon Seeps)	NA	Seep	Unlined	Removed by EOY 2019

*Seeps may be routed to the Surge Tank in the future.

Table 4 Existing and EOY 2019 PMLU Building Information

Description	Building Information					
	Dimensions				PMLU	
	L	W	H	Diameter	Previous CCP Designation	EOY 2019 Designation
Abandoned Building 1 (Shop #1)	51	28	12		Demolish	Removed ²
Abandoned Building 2 (Shop#2)	60	48	20		Demolish	Removed ²
Carpenter Shop	60	30	20		Industrial PMLU	Removed ²
Chemical Lab	90	40	20		Industrial PMLU	Removed ²
Concentrate Storage Tank			50	30	Demolish	Removed ²
Explosives Storage	10	12	12		Demolish	Removed ²
Garage	26	12	10		Demolish	Removed ²
General Offices	118	38	20		Industrial PMLU	Removed and replaced Industrial PMLU ¹
Machine Shop	141	40	20		Industrial PMLU	Removed ²
Magnetic Separator	15	20	14		Demolish	Removed ²
MCC (Power Generation) Building	40	24	20		Industrial PMLU	Removed ²
Mill Building #1 and Concentrator	160	140	70		Demolish	Removed ²
Mill Building #2	197	140	70		Demolish	Demolish
Mine Change Room	152	50	20		Industrial PMLU	Removed ²
No. 2 Mill Secondary Crusher Building	36	38	50		Demolish	Demolish
No. 2 Mill Stacker	820	20	15		Demolish	Demolish
No. 3 Headframe	30	50	100		Demolish	Removed ²
No. 3 Hoist/Comp Building	150	45	28		Demolish	Removed ²
No. 4 Headframe and Fan	50	13	42		Demolish	Removed ²
No. 4 Hoist House and MCC	20	16	14		Demolish	Removed ²
Oil Storage Building	37	26	16		Demolish	Removed ²
Ore Bin (large)			90	30	Demolish	Removed ²
Ore Bin (large)			90	30	Demolish	Removed ²
Ore Bin (small)			70	30	Demolish	Removed ²
Pioneer Crusher	35	25	40		Demolish	Removed ²
Powder Magazine 1	40	20	20		Demolish	Removed ²
Powder Magazine 2	40	20	20		Demolish	Removed ²
Primary Crusher	70	50	60		Demolish	Removed ²
Pump House (near Mill No. 2)	25	25	25		Demolish	Removed ²
Pump House and Shed for Thickener	10	10	14		Demolish	Demolish
Safety (Engineering) Building	60	30	12		Industrial PMLU	Removed ²
Scale House (Guard Shack)	10	10	10		Demolish	Removed ²
Sewage Treatment Facility	25	40	12		Industrial PMLU	Removed and replaced Industrial PMLU ¹
Small Truck Shop	102	40	20		Industrial PMLU	Removed and replaced Industrial PMLU ¹
Stacker Hoist	28	23	18		Demolish	Demolish
Substation No. 2	66	50	30		Industrial PMLU	Removed and replaced Industrial PMLU ¹
Surge Tank			18	50	Industrial PMLU	Industrial PMLU
Thickener MCC	18	18	12		Demolish	Demolish
Thickener MCC	12	22	15		Demolish	Demolish
Thickener Tank (100-ft diam.)			14	100	Demolish	Removed ²
Thickener Tank (60-ft diam.)			20	60	Demolish	Removed ²
Warehouse	231	40	21		Industrial PMLU	Removed ²
Water Tank (near stacker and stacker hoist)			120	40	Industrial PMLU	Industrial PMLU
Water Tank (on Hanover Mountain)			30	25	Demolish	Removed ²
Water Tank (on Hanover Mountain)			20	15	Demolish	Removed ²
Water Tank (on Hanover Mountain)			50	35	Demolish	Removed ²

¹ Assume any new replacement building constructed prior to 2019 Full Build Out reclamation will have an Industrial PMLU

² Located within the estimated Hanover Mountain Mine (Hanover Mountain Deposit)/ Cobre Haul Road footprint. Removed Prior to EOY 2019.

Note: The following structures listed in GR002RE 01-1, Appendix D, have been removed: Unleaded Gasoline Above-ground Storage Tank, Underground Explosives Storage, Underground Fuel Farm, PBC Storage Building, Underground Mine Operations Office, and Ambulance Garage. Building dimensions have been updated; the No. 3 Headframe and No. 4 Headframe and Fan are listed as separate buildings.

Table 5 Summary of Key Reclamation Design Criteria

Area Covered	Reclamation Activities	Criteria			
		Regrading	Top Surface Channels/Downdrains/ Outslope Channels	Cover/Ripping/Revegetation	Miscellaneous
Main Tailings Impoundment	<ul style="list-style-type: none"> Regrading top surface and southeast rock embankment Completing surface water channels to route stormwater Hauling and grading cover material Riping and revegetating covered areas 	<ul style="list-style-type: none"> Minimum 0.5% top surface slope Buttresses, constructed along the east and south portions of the embankments in 2005, are preserved at 3H:1V overall slope. The existing test plots are preserved. 200-foot maximum interbench length Maximum 3H:1V interbench slopes Southwest rock embankment and Weber Pond area left in existing configuration 	<ul style="list-style-type: none"> Top surface channels: convey runoff from the impoundment top surface and surrounding tributary area or to the embankment toe. Construct downdrains Outslope channels: <ul style="list-style-type: none"> - 20-foot wide - 5.0% maximum cross-bench slope - 2.0% longitudinal bench slope (max 5%) 	<ul style="list-style-type: none"> 36-inch top cover consisting of 24 inches of hauled in cover (accounting for existing cover materials already placed) and the upper 12 inches of tailing (GR002RE D.2.b and DP-1403, Condition 77) 36 inch outslope cover Rip and revegetate covered surfaces 	<ul style="list-style-type: none"> Tailing Pipelines: Flushed, capped and buried in place with 36-inches cover Benches-30-foot bench width (maximum 50-feet), 5.0% maximum cross-bench slope, 2.0% longitudinal bench slope and 3-feet of cover
Magnetite Tailings Impoundment	<ul style="list-style-type: none"> Regrading top and outslope Completing a downdrain channel Hauling and grading cover material Riping and revegetating covered areas 	<ul style="list-style-type: none"> Maximum 3H:1V interbench slopes; Minimum 0.5% top surface slope. 	<ul style="list-style-type: none"> Construct downdrain to drain the top surface and discharge on the west side of the embankment. 	<ul style="list-style-type: none"> 36-inch top and outslope cover Rip and revegetate covered surfaces. 	NA
SWRDF	<ul style="list-style-type: none"> Regrading top surfaces and outslope benches Hauling and grading cover material Completing surface water channels to route stormwater Riping and revegetating covered areas 	<ul style="list-style-type: none"> 200-foot maximum interbench slope length Maximum 3H:1V interbench slopes 1% minimum top surface slope East side 175-foot maximum interbench slope length, maximum 2.5H:1V interbench slope to preserve the road located at the toe of the stockpile. 	<ul style="list-style-type: none"> Top surface channels: convey runoff to downdrains Construct downdrains Outslope channels <ul style="list-style-type: none"> -20-foot wide - 5.0% maximum cross-bench slope -2.0% longitudinal bench slope (max 5%) 	<ul style="list-style-type: none"> 36-inch top and outslope cover, the upper 24 inches of waste rock are approved as part of the cover (DP-1403, Condition 77) on the east side of the East, and Union Hill WRFs that remain unburied by the expansion Rip and revegetate covered surfaces 	<ul style="list-style-type: none"> Benches-30-foot bench width (maximum 50-feet), 5.0% maximum cross-bench slope, 2.0% longitudinal bench slope
Low Grade WRF	<ul style="list-style-type: none"> Surface grading Hauling and grading cover material Completing surface water channels Rip and revegetate covered areas 	<ul style="list-style-type: none"> Maximum 3H:1V interbench slopes 	NA	<ul style="list-style-type: none"> 36-inch top and outslope cover, the upper 24 inches of material are approved as part of the cover (DP-1403, Condition 77) Rip and revegetate covered surfaces 	NA
Hanover Mountain Deposit	<ul style="list-style-type: none"> Hauling and grading cover material in accessible areas Riping and revegetating covered areas Fencing and Berms 	NA	NA	<ul style="list-style-type: none"> 36-inch cover in accessible areas Rip and revegetate covered surfaces 	<ul style="list-style-type: none"> Fencing-A combination of 6-foot chain link fencing and berms Rip and revegetate disturbance area used to construct the chain link fencing, and berm
Continental Pit	<ul style="list-style-type: none"> In GR002RE 01-1 the Continental Pit was granted a conditional waiver from achieving a self-sustaining ecosystem. The Continental Pit is unchanged by EOY 2019 Fencing and Berms 	NA	NA	NA	<ul style="list-style-type: none"> Fencing-A combination of 6-foot chain link fencing and berms Rip and revegetate disturbance area used to construct the chain link fencing, and berm
Surface Impoundments	<ul style="list-style-type: none"> Ripping liners and burying in place Grading to drain Hauling and grading cover material Riping and revegetating covered areas 	NA	NA	<ul style="list-style-type: none"> 36-inch cover Rip and revegetate 	NA
Pearson-Barnes Mine Area	<ul style="list-style-type: none"> Hauling and grading cover material Riping and revegetating covered areas 	NA	NA	<ul style="list-style-type: none"> 36-inch cover, tapering down to leaving existing channels Existing channels will remain in their current configuration Rip and revegetate covered surfaces 	NA

Table 5 Summary of Key Reclamation Design Criteria (Continued)

Area Covered	Reclamation Activities	Criteria			
		Regrading	Top Surface Channels/Downdrains/ Outslope Channels	Cover/Ripping/Revegetation	Miscellaneous
Haul Roads	<ul style="list-style-type: none"> Grading to drain Hauling and grading cover material Ripping and revegetating covered areas 	NA	NA	<ul style="list-style-type: none"> Roads are ripped to a depth of 18 to 24 inches. 36-inch cover Rip and revegetate 	NA
Cobre Haul Road	<ul style="list-style-type: none"> Grading to drain and incorporate berm material into the road A smaller (approximately 12-14 feet in width) will remain on the CHR for post closure maintenance. Road crossing at forest access road and Hanover Creek will be removed and demolished Ripping and Revegetating of CHR surfaces 	NA	NA	<ul style="list-style-type: none"> Rip to a depth of 18 to 24 inches, grade, and revegetate 	NA
Borrow Areas	<ul style="list-style-type: none"> Ripping and revegetating 	NA	NA	<ul style="list-style-type: none"> Borrow areas left in a condition such that they can be directly ripped and revegeted 	NA
Building/Structural Demolition (non-Industrial PMLU Areas)	<ul style="list-style-type: none"> All equipment and above-grade structures are demolished and removed from the area or buried Debris is placed either into the stockpiles or other designated area Any new buildings constructed prior to reclamation have an Industrial PMLU Hauling and grading cover material for demolition areas and/or debris Ripping and revegetating disturbed areas 	NA	NA	<ul style="list-style-type: none"> Demolition and demolition debris areas: 36-inch cover, ripped and revegetated 	NA
Operations and Maintenance	<ul style="list-style-type: none"> Erosion control Road Maintenance Revegetation Maintenance 	NA	NA	<ul style="list-style-type: none"> Based on observations of previously reclaimed areas, the annual vegetation failure is conservatively estimated to be 2% failure every year for a total of 12 years, starting the year reclamation is completed 	NA
Water Management	<ul style="list-style-type: none"> Ponds, tanks, pipelines, pumps, and electrical infrastructure maintenance, replacement and removal Water monitoring 	NA	NA	NA	NA

Table 6 Proposed Interim Seed Mix and Rates

Species¹	Life-Form	Duration	Seasonality	Rate^{1,2}
Blue gramma (<i>Bouteloua gracilis</i>)	Grass	Perennial	Warm	0.25
Side-oats grama (<i>Bouteloua curtipendula</i>)	Grass	Perennial	Warm	1.25
Green sprangletop (<i>Leptochloa dubia</i>)	Grass	Perennial	Warm	0.15
Plains lovegrass (<i>Eragrostis intermedia</i>)	Grass	Perennial	Intermediate	0.06
Bottlebrush Squirreltail (<i>Sitanion hystrix</i>)	Grass	Perennial	Cool	1.25
New Mexico feathergrass (<i>Stipa neomexicana</i>)	Grass	Perennial	Cool	1.75
Streambank wheatgrass (<i>Elymus lanceolatus</i>)	Grass	Perennial	Cool	1.50
Apache plume (<i>Fallugia paradoxa</i>)	Shrub	Perennial	NA	0.09
Mountain mahogany (<i>Cercocarpus montanus</i>)	Shrub	Perennial	NA	1.00
Winterfat (<i>Eurotia lanata</i>)	Shrub	Perennial	NA	0.60
White prairie clover (<i>Dalea candida</i>)	Forb	Perennial	NA	0.15
Globe mallow (<i>Sphaeralcea sp.</i>)	Forb	Perennial	NA	0.10
Blue flax (<i>Linum lewisii</i>)	Forb	Perennial	NA	0.15
Total Pure Live Seed (lbs/ac)				8.3

¹ Seed mix and rates subject to change based on future investigations and availability. Alternate or substitute species lists are available in the MMD Permit GR002RE.

²Rate is in pounds of pure live seed per acre; Substitutions may change seeding rates.

NA = not applicable.

Table 7 Proposed Plant Diversity Guidelines

Class	Seasonality	Number	Minimum Occurrence (% cover)
Perennial Grass	Warm	3	1
Perennial Grass	Cool	2	0.5
Perennial Shrub	NA	2	1
Perennial Forbs	NA	2	0.1

Table 8 Earthwork Capital Costs

Item	Subtotal, Direct Costs	Subtotal, Indirect Costs	Total Estimated Cost
Capital		28.3%	
Tailing Ponds			
Magnetite Tailing Pond	\$1,015,682	\$287,438	\$1,303,120
Main Tailings Impoundment	\$2,591,919	\$733,513	\$3,325,432
Subtotal	\$3,607,601	\$1,020,951	\$4,628,552
Waste Rock and Ore Piles			
SWRDF	\$8,208,701	\$2,323,062	\$10,531,763
Hanover Mountain Deposit	\$1,458,813	\$412,844	\$1,871,658
Low Grade WRF	\$127,626	\$36,118	\$163,744
Subtotal	\$9,795,140	\$2,772,024	\$12,567,165
Continental Pit			
Total	\$84,434	\$23,895	\$108,328
Surface Impoundments			
Subtotal	\$98,017	\$27,739	\$125,756
Historic Sites			
Pearson-Barnes Mine Area	\$146,547	\$41,473	\$188,019
Other Disturbed Areas			
Haul and Exploration Roads	\$88,407	\$25,019	\$113,426
Wells	\$7,791	\$2,205	\$9,996
Subtotal	\$96,198	\$27,224	\$123,422
Demolition			
Buildings	\$575,750	\$162,937	\$738,687
Cover	\$37,473	\$10,605	\$48,078
Rip & Revegetation	\$963	\$273	\$1,236
Subtotal	\$614,186	\$173,815	\$788,001
Total Capital Cost	\$14,442,123	\$4,087,121	\$18,529,244
CHR Total Capital Cost*	\$139,726	\$39,542	\$179,269
Total	\$14,582,000	\$4,127,000	\$18,709,000

*From 2014 Cobre Haul Road Closeout Plan (Telesto, 2014)

Table 9 Earthwork O&M Costs

Total Earthwork O&M Cost¹				
Period (years)	Erosion Control	Road Maintenance	Revegetation Maintenance	Total (Current Year \$)
Overall Site				
0 to 19	\$743,941	\$782,373	\$255,224	\$1,782,000
20 to 39	\$457,810	\$504,757	\$0	\$963,000
40 to 99	\$343,358	\$757,135	\$0	\$1,100,000
Totals	\$1,545,000	\$2,044,000	\$255,000	\$3,845,000
CHR²				
0 to 11	\$97,285	-	\$26,142	\$123,000
Totals	\$1,642,000	\$2,044,000	\$281,000	\$3,968,000

¹ Earthwork O&M costs include 23.3% indirect costs.

² From 2014 Cobre Haul Road Closeout Plan (Telesto, 2014)

Table 10 Water Management Costs

Item	Subtotal, Direct Costs	Subtotal, Indirect Costs	Total Estimated Cost
Capital and Replacement		28.3%	
Ponds and Tanks	\$642,853	\$181,927	\$824,780
Pumps	\$570,399	\$161,423	\$731,822
Pipelines	\$0	\$0	\$0
Electrical	\$0	\$0	\$0
Subtotal	\$1,213,252	\$343,350	\$1,556,602
Removal¹		28.3%	
Pumps	\$145,000	\$41,035	\$186,035
Pipelines	\$95,129	\$26,922	\$122,051
Electrical	\$48,038	\$13,595	\$61,633
Subtotal	\$288,167	\$81,552	\$369,719
Operations and Maintenance		17%	
Ponds and Tanks	\$185,842	\$31,593	\$217,435
Pumps	\$110,100	\$18,717	\$128,817
Pipelines	\$156,272	\$26,566	\$182,838
Electrical Infrastructure	\$110,007	\$18,701	\$128,708
Materials		0%	
Electricity and Fuel	\$36,148	\$0	\$36,148
Environmental Sampling	\$290,360	\$0	\$290,360
Subtotal	\$888,729	\$95,577	\$984,306
Total Estimated Cost	\$2,390,000	\$520,000	\$2,911,000

¹Removal costs for ponds and tanks are included in the earthwork portion of the cost estimate.

Table 11 Closure Schedule

Facility¹	Anticipated Duration (Years)²
South Waste Rock Disposal Facility	2.5
Low Grade WRF and High Grade Ore Stockpile	2.5
Main Tailings Impoundment and Reclaim Pond	2
Magnetite Tailings Impoundment	1.5
Hanover Mountain Deposit	3.5
Surface Impoundments	0.5
Haul Roads	0.5
Exploration Roads	0.5
Pearson-Barnes Mine Area	0.5
Continental Pit	1.5
North Overburden Stockpile	2.5
South Overburden Stockpile	2.5
Overburden Stockpiles 1, 2, 3, 4, 5	1.5
Top Soil Stockpile	1.5
Water Management	12
Building/Structural Demolition (non-Industrial PMLU Areas)	2.5

¹ Reclamation is not to exceed 200 acres/year.

² Estimated duration for reclamation does not include regulatory design review and approval processes. Some areas may be left open to be used in maintenance activities on reclaimed facilities.