DRAFT REPORT

ATTACHMENT E2

TSF POST-OPERATIONS WATER MANAGEMENT PLAN

COPPER FLAT MINE

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1.0 INTRODUCTION

Golder Associates has been contracted by New Mexico Copper Corporation (NMCC) to prepare a Reclamation and Closure Plan for its Copper Flat project located near Hillsboro, New Mexico in Sierra County (**Figure E1**). The Reclamation and Closure Plan describes the designs and strategy for reclamation of all of the disturbed areas described in NMCC's Mine Operations and Reclamation Plan document to which this document is attached as Appendix E. As part of this Plan, Golder has developed the following plan for management of drain down and surface runoff waters from the Tailings Storage Facility (TSF) following cessation of operations. The following sections detail the sources of water to be managed, the performance objectives of the water management plan, and the associated plan for management of these waters, including designs for both active and passive evaporation water management systems.

1.1 Sources of Water to be Managed

The flow components that will need to be managed from the TSF at the end of operations include drainage water collected from the impoundment and dam underdrain collection systems, and surface water runoff from the embankment. As described in Section 6.5.2 of the TSF Feasibility Level Design Report (FLDR) [Golder, 2015], the maximum underdrain flow rate from the TSF at final buildout will be approximately 66 gallons per minute (gpm) from the impoundment underdrain and approximately 448 gpm from the dam underdrain. Surface water runoff estimates from the TSF are provided in the water balance calculations included in Appendix G of the FLDR. The estimated surface water runoff from the embankment ranges between 1.4 gpm in April and 86 gpm in July. These three flow components represent the maximum flows estimated to be managed. The flows will be reduced over time as drain down from the TSF decreases and the TSF gets reclaimed and covered. Following cover placement on the TSF embankment, surface water runoff will be routed to the nearest natural drainage.

1.2 Performance Objectives

The performance objective for the water management program is to collect and eliminate, using evaporation techniques, drain down waters and surface water runoff from uncovered slopes associated with the TSF following the cessation of mining and processing operations at Copper Flat. To meet the performance objectives the following strategy will be utilized:

- A short-term active evaporative water management system (AEWMS) will be utilized to capture and evaporate all tailing drain down waters and surface water runoff from the TSF embankment outslopes for the first five years following closure, or until flows reduce to a point to where they can be managed exclusively through passive evaporation.
- A long-term passive evaporative water management system (PEWMS) will be utilized to evaporate the residual tailing drain down waters beginning in year six and continuing for an estimated 20 years thereafter.

2.0 BACKGROUND

The purpose of the TSF water management program is to provide an environmentally sound and cost effective approach to manage, reduce, and eventually eliminate drain down waters and surface water runoff from uncovered slopes associated with the TSF following cessation of mining and processing operations at Copper Flat. The water management program assumes that tailings delivery to the TSF will terminate following the cessation of processing operations at Copper Flat.

2.1 TSF Facility

Golder completed a feasibility level design of the TSF in 2015 (Golder, 2015). The proposed TSF will include an HDPE-lined tailings impoundment with an associated underdrain collection system and underdrain collection pond for the impoundment and the dam, and a water reclaim or recycle system to maximize water reuse. The TSF and associated ancillary facilities will cover approximately 564 acres in size at full capacity (**Figure E2**) and will be constructed using the centerline construction method. The TSF design will comply with the design and dam-safety guidelines of the New Mexico Office of the State Engineer Dam Safety Bureau. The tailings impoundment is designed to store 113 million tons of tailings produced over approximately 11 years, with tailings deposition occurring at an average rate of approximately 27,900 tons per day over the life of the mine.

The underdrain collection pond will be constructed along the southeastern corner of the TSF to contain drainage water from the TSF impoundment and dam underdrains, as well as runoff from the downstream face of the tailings dam. The pond is designed for full TSF operation, including dam construction. Flow to the underdrain collection pond will begin to decrease immediately once dam construction stops. The pond is sized to contain 24 hours of tailing drainage flow at maximum estimated drainage rates, runoff from the 100-year, 24-hour storm event of 3.73 inches (National Oceanic and Atmospheric Administration, 2006) incident on the downstream dam face, and an additional minimum 2-feet of freeboard. This pond will be utilized after mine operations cease as part of the TSF water management program.

At reclamation, the TSF outslope will, first, be graded down to interbench slopes of between 3.0H:1V and 3.5H:1V with 25 foot wide terrace benches on the outslope at maximum slope lengths of between 200 feet (3H:1V) and 250 feet (3.5:1V). Reclamation of the TSF includes grading of the TSF top surface to a final grade of between 1 and 5% to direct storm water to the back side of the TSF and out to Grayback Arroyo after cover placement. The top surfaces and outslopes of the TSF will be covered with 36 inches of growth media and seeded to reestablish vegetation. Surface water conveyance channels will be constructed on the top surface of the TSF and terrace benches to direct surface water off the covered TSF surfaces and ultimately to Grayback Arroyo and other natural drainages to the exterior of the mine.

2.2 Climate

The Copper Flat property is located within an arid, high desert area in the Basin and Range physiographic province subject to hot summers and relatively mild winters. Maximum summer temperatures can exceed 100 degrees Fahrenheit (°F) while the average maximum daily temperature during winter months is approximately 60 °F. Average annual rainfall is approximately 12.4 inches and the property receives snow periodically (**Table E1**).

Most rainfall occurs in July through September and is associated with high intensity, short duration, convective storms and moisture from the Gulf of Mexico. Winter precipitation is associated with west to east moving Pacific frontal storms. These storms typically produce less intense precipitation over a longer duration.

Evaporative demand in this region is high and annual evaporation far exceeds annual precipitation. Annual pan evaporation measured at Caballo Dam is approximately 107 inches, and ranges between approximately 3.5 inches in December to 14.8 inches in June (**Table E2**). Equivalent free water evaporation rates for the Copper Flat site are calculated based on these data and an applied pan coefficient of 0.7. Annual equivalent free water evaporation is estimated at approximately 74.9 inches, and ranges between approximately 2.4 inches in December to 10.4 inches in June (**Table E2**). The estimated amount of excess water evaporated from surface water bodies at the Copper Flat site is calculated as equivalent free water evaporation minus precipitation. The estimated annual excess evaporation for surface water bodies at Copper Flat is approximately 62.5 inches, and ranges between 1.6 inches in December to 9.7 inches in June (**Table E3**). Annual excess evaporation is equivalent to passive evaporation within the context of this plan.

3.0 TSF POST-OPERATIONS WATER MANAGEMENT PLAN

The FLDR for the TSF indicates that the maximum drain down flow rate will be approximately 448 gpm from the dam underdrain and 66 gpm from the impoundment underdrain. Due to the coarser nature of the tailings sands used to construct the TSF dam and the higher permeability of these materials, the TSF embankment will drain quickly in comparison to the impoundment. It is estimated that it will take approximately 2 to 3 years for the TSF embankment to drain sufficiently to begin reclamation. It is also anticipated that some reclamation of the impoundment can begin within 5 years of cessation of operations as the impoundment continues to drain and dry, allowing construction equipment to be utilized to commence cover placement.

The underdrain systems will continue to operate after cessation of mining and processing as drain-down of the TSF will continue to produce water for a number of years thereafter. This Plan assumes that drain-down will continue for 25 years. The actual amount of time required to so is a function of porosity of tailings materials in the long-term and the volume of water remaining in the TSF. An "active" water management program (short-term AEWMS) will be implemented at the end of operations. Water captured in the TSF underdrain collection pond will be pumped back to the impoundment surface of the TSF. A forced or enhanced evaporation system will be installed within the impoundment to dispose of the water. The duration of operation of the "active" water management system will be determined by the volume of water that continues to drain from the impoundment. However, for planning purposes it has been assumed that there will be 5 years of operation of the active program followed by 20 years of "passive" drain-down water management. During the active evaporation phase, reclamation of the TSF will continue such that grading will have been completed and the cover will have been placed on the TSF. Toward the end of the active evaporation phase, an evaporation pond will be constructed that will incorporate the underdrain collection pond. Once complete, the "passive" evaporation phase (PEWMS) will be initiated.

After decommissioning of the active program and full reclamation of the TSF, water that may continue to drain from the TSF will be captured and evaporated in the new evaporation pond (**Figure E3**). Details of the short-term AEWMS and the PEWMS are provided in the following sections.

3.1 Short-Term Active Evaporative Water Management System (AEWMS)

The short-term AEWMS consists of forced evaporation and wetted surface evaporation of water collected from the TSF underdrain collection system and surface water runoff from the TSF embankment. The collected waters will be pumped to the top of the TSF into a designated ponding/spray area and actively and passively evaporated (**Figure E3**). The "active" or forced evaporation system consists of a 15 acre ponding/spray area to maximize the evaporation rate of the waters. Forced evaporation will be accomplished with a mechanical spray system designed to handle flows up to 380 gpm per unit. Spray evaporation estimates are based on a daily evaporation chart for Model 1210 evaporator systems provided by Minetek (2012). The typical spray pattern for these systems covers an area approximately 500 feet long by 300 feet wide. A 4 unit spray system with a capacity to handle up to 1,520 gpm will be installed. Passive evaporation of the TSF drain down waters will also continue to occur at the same time within the TSF impoundment surface and on the ponded surface of the TSF underdrain collection pond.

3.1.1 AEWMS Estimates

Based on the daily evaporation chart provided by Minetek (2012), it is estimated that the four unit spray system will be capable of evaporating between approximately 520 gpm (December) and 1,018 gpm (June), with an average evaporation rate of approximately 789 gpm (**Table E4**). The residual water in the ponded area will either evaporate through surface evaporation or will drain into the underlying tailing material and back to the TSF underdrain collection system. The estimated amount of passive evaporation of the waters within the TSF underdrain collection pond ranges between approximately 4 gpm in December to approximately 25 gpm in June. The estimated monthly and annual evaporation potential of the short-term AEWMS is summarized in **Table E4**.

The short-term AEWMS will continue to operate until drain down reduces to a point to where the flows can be handled through passive evaporation within the evaporation pond discussed later, herein. Underdrain flows will diminish over time once tailing discharge to the top of the TSF is discontinued. Due to the high permeability of the tailings sands used to construct the TSF embankment, drain down of the TSF embankment will occur more rapidly than within TSF impoundment area, where the permeability of the slimes fraction of the tailings is much lower. Thus, the largest flow component (448 gpm) will drop off more rapidly than the flow component from the impoundment.

A conceptual drain down curve was developed for the Copper Flat TSF based on evaluation of measured drain down flow rates from four closed tailing storage facilities in Nevada and a conceptual tailings storage facility drain down curve developed by the Nevada Department of Environmental Protection (2011). These drain down curves are presented in terms of relative flows (drain down flow relative to the maximum flow at the beginning of closure) in **Figure E4.** The conceptual Copper Flat TSF drain down curve developed for the purpose of this water management plan is also presented in **Figure E4**. **Figure E5** presents the conceptual Copper Flat TSF drain down curve in terms of estimated flows in gpm over time following cessation of mining and processing operations at Copper Flat.

It is anticipated that the TSF embankment will be regraded, covered and revegetated within three years following cessation of operations. Once the embankment area has been reclaimed, surface water runoff from the outslope of the embankment will no longer need to be captured and will be directed to the nearest drainage. However, for water management planning purposes, the surface water runoff component is included throughout the 5 year AEWMS operational period.

3.1.1 AEWMS Water Balance

The maximum flows that will be encountered during the short-term AEWMS will occur during the first year of operation as the higher permeability sands within the TSF embankment drain. As shown on **Table E5**, the four unit spray system will provide excess evaporation potential under these maximum flow conditions. It is anticipated that the number of spray units and/or their hours of operation will be adjusted throughout the AEWMS program based on the actual flows encountered during the initial months of operation and as the TSF drain down flows decline. The AEWMS will be capable of providing even greater excess evaporation potential in the remaining four years of AEWMS operation as the TSF drain down flows decline over time. Although it is estimated that the AEWMS will operate for a period of 5 years, the duration of operation will be determined when TSF drain down reduces to a point to where the flows can be handled through passive evaporation within the evaporation pond. As described in Section 3.2, the maximum flow that can be handled with the PEWMS is approximately 70 gpm.

3.2 Long-Term Passive Evaporative Water Management System (PEWMS)

A long-term PEWMS will be utilized to evaporate residual tailing drain down waters after operation of the AEWMS is no longer required. Prior to the start of the PEWMS, a new HDPE-lined evaporation pond will be constructed to provide sufficient surface area to passively evaporate the residual drain down waters from the TSF. The following sections provide details of the evaporation pond construction and the evaporation schedule associated with the PEWMS.

3.2.1 Evaporation Pond Construction

The location of the evaporation pond is shown on **Figure E6**. The existing TSF underdrain collection pond will be incorporated into the new evaporation pond by removing the existing collection pond embankment and fusing new HDPE liner onto the remaining collection pond liner. The evaporation pond will essentially be an extension of the existing TSF underdrain collection pond and will incorporate all the design features of the underdrain collection pond. The evaporation pond will be double-lined with an 80-mil HDPE geomembrane top liner and a 60-mil HDPE geomembrane bottom liner. An HDPE geonet will be placed between the liners to serve as the evaporation pond leakage collection and recovery system (LCRS) and minimize the head on the lower pond liner. The existing TSF underdrain collection pond and LCRS pump will be utilized to recover any leakage through the upper geomembrane.

Drain down water from the TSF impoundment and dam will be conveyed to the evaporation pond through the existing underdrain collection system. The pond will cover an area of 22.3 acres and is sized to contain one foot of TSF drain down water for passive evaporation, and an additional minimum 2-feet of freeboard. At a stage of one foot, the surface area of the pond will cover 21.6 acres. The pond capacity is approximately 21.93 million gallons with 2 feet of dry freeboard below the crest of the pond (top of pond liner).

3.2.2 PEWMS Estimates

TSF drain down water will be allowed to fill to a maximum depth of one foot within the pond and will be maintained at this depth throughout the PEWMS operation for passive evaporation. At a depth of one foot, the surface area of the pond will cover 21.6 acres. Based on the surface water evaporation estimates provided in **Table E3**, it is estimated that the 21.6 acre water body will evaporate an average of approximately 135 acre-feet/year (average 84 gpm annually), and incident precipitation will amount to approximately 22 acre-feet/year (average 14 gpm annually). Excess evaporation (free water evaporation minus incident precipitation) from the 21.6 acre water body is estimated at approximately 113 acre-feet/year (average 70 gpm annually). This excess evaporation is referred to herein as passive evaporation.

3.2.3 PEWMS Water Balance

The TSF drain down estimates over the 25 year TSF water management program are summarized in **Table E6** along with the PEWMS water balance over the 20 year operational period. The maximum TSF drain down flow during the PEWMS operation is estimated at 67 gpm immediately following the AEWMS operation and will reduce to rates below 5 gpm after 16 years of PEWMS operation. The TSF water management plan assumes 20 years of PEWMS operation. The duration of the PEWMS operation will be dependent on when the volume of drain down from the TSF is reduced to a point to where the evaporation pond is no longer required. This point in time will be determined in collaboration with the Agencies and the evaporation pond will be reclaimed thereafter in accordance with the Reclamation and Closure Plan.

4.0 SUMMARY

The TSF closure water management plan includes both a short-term AEWMS and a long-term PEWMS to manage drain down waters and surface water runoff from the TSF following cessation of mining operations at Copper Flat. The TSF underdrain systems will continue to operate after cessation of operations, and the AEWMS program will commence thereafter. The AEWMS will include pumping captured water from the TSF underdrain collection pond to the impoundment surface of the TSF and use of forced or enhanced evaporation equipment to minimize or eliminate the water. The AEWMS will utilize a forced evaporation system at a dedicated spray area on top of the TSF. Forced evaporation of these waters will be accomplished with a 4 unit mechanical spray system with a capacity to handle up to 1,520 gpm. Additional passive evaporation of the TSF drain down waters will also occur on the ponded surface of the TSF underdrain collection pond.

A conceptual drain down curve was developed for the Copper Flat TSF based on evaluation of measured drain down flow rates from four closed tailing storage facilities in Nevada and a conceptual tailings storage facility drain down curve developed by the Nevada Department of Environmental Protection (2011). Based on this conceptual drain down curve and estimated surface water runoff from the TSF embankment provided in the FLDR (Golder, 2015) it is estimated that the AEWMS will operate for approximately 5 years. Although it is estimated that the AEWMS will operate this long, the duration of operation will be determined when the volume of TSF drain down water reduces to a point to where the flows can be handled through passive evaporation within a constructed evaporation pond. The maximum flow that can be handled with the PEWMS is approximately 70 gpm.

After decommissioning of the active program and reclamation of the TSF, water that may continue to drain from the TSF will be captured in a new 22.3 acre evaporation pond that will be constructed below the toe of the TSF within the mine permit area coincident with the underdrain pond. TSF drain down water will be allowed to fill to a maximum depth of one foot within the pond and will be maintained at this depth throughout the PEWMs program to be passively evaporated. At a depth of one foot, the surface area of the pond will cover 21.6 acres. Approximately 113 acre-feet/year (average 70 gpm annually) will passively evaporate from a 21.6 acre surface water body at Copper Flat. The maximum TSF drain down flow during the PEWMS operation is estimated at 67 gpm immediately following the AEWMS operation and will reduce to rates below 5 gpm over time. While the TSF water management plan assumes 20 years of PEWMS operation, the actual duration of the PEWMS operation will continue until the volume of drain down water from the TSF reduces to the point where the evaporation pond is no longer required. This point in time will be determined in collaboration with the Agencies and the evaporation pond will be reclaimed thereafter.

5.0 REFERENCES

Golder. 2015. Feasibility Level Design, 30,000 TPD Tailings Storage Facility, Copper Flat Project, Sierra County, New Mexico. Submitted to New Mexico Copper Corporation THEMAC Resources Group Ltd. November 30, 2015.

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National Oceanic and Atmospheric Administration. 2006. Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 1, Version 4.0, Semiarid Southwest (Arizona, Southeast California, Nevada, New Mexico, and Utah. G. M. Bonnin, D. Martin, B. Lin, T. Parzybok, M. Yekta, and D. Riley. National Weather Service, Silver Spring, Maryland. 2004, revised October 4, 2006.

TABLES

Table E1. Average Monthly Temperatures and Precipitation Near the Copper Flat Project Area[1]

Month	Average Temperature		Average Precipitation
	° F		Inches
	Min	Max	Total
January	25.0	55.9	0.57
February	28.1	59.8	0.56
March	33.5	66.4	0.38
April	39.7	74.4	0.32
May	47.4	82.5	0.52
June	56.1	91.7	0.71
July	61.3	91.2	2.30
August	59.6	88.5	2.42
September	52.8	83.4	2.08
October	42.0	73.8	1.17
November	31.3	62.8	0.55
December	24.9	54.3	0.83
Annual	**41.8**	**73.6**	**12.40**

Notes:
(1) Data from the Western Regional Climate Center covering the period between 1893 and 2016 from Hillsboro, NM Climate Station #294009.

Table E2. Average Monthly Pan Evaporation and Free Water Evaporation Near the Copper Flat Project Area

Period	Average Pan Evaporation[1]	Estimated Average Free Water Evaporation[2]
	inches	inches
	Total	Total
January	4.42	3.09
February	5.10	3.57
March	8.56	5.99
April	11.37	7.96
May	13.59	9.51
June	14.80	10.36
July	13.08	9.16
August	11.35	7.95
September	9.26	6.48
October	7.27	5.09
November	4.78	3.35
December	3.48	2.44
Annual	**107.06**	**74.94**

Notes:
(1) Pan evaporation data from the Western Regional Climate Center for Caballo Dam covering the period between 1938 and 2005.
(2) Estimated free water evaporation based on applying a pan coefficient of 0.7 to the measured pan evaporation values.

Table E3. Estimated Amount of Excess Water Evaporated from Surface Water Bodies at the Copper Flat Site

Month	Estimated Average Free Water Evaporation(1)	Average Precipitation(2)	Excess Evaporation(3)
	Inches	Inches	Inches
	Total	Total	Total
January	3.09	0.57	2.52
February	3.57	0.56	3.01
March	5.99	0.38	5.61
April	7.96	0.32	7.64
May	9.51	0.52	8.99
June	10.36	0.71	9.65
July	9.16	2.30	6.86
August	7.95	2.42	5.53
September	6.48	2.08	4.40
October	5.09	1.17	3.92
November	3.35	0.55	2.80
December	2.44	0.83	1.61
Annual	**74.94**	**12.40**	**62.53**

Notes:

(1) Estimated free water evaporation based on applying a pan coefficient of 0.7 to the measured pan evaporation values. Pan evaporation data from the Western Regional Climate Center for Caballo Dam covering the period between 1938 and 2005.

(2) Average monthly precipitation from the Western Regional Climate Center covering the period between 1893 and 2016 from Hillsboro, NM Climate Station #294009.

(3) Excess evaporation equals estimated free water evaporation minus precipitation.

Table E4. AEWMS Evaporation Potential at the Copper Flat Site

Month	Estimated Passive Evaporation[1]		Estimated Active Evaporation[2]		Total AEWMS Evaporation Potential[3]	
	gallons	gpm	gallons	gpm	gallons	gpm
January	278,947	6.2	24,302,594	544	24,581,542	551
February	332,659	8.3	26,454,042	656	26,786,701	664
March	620,227	13.9	35,638,915	798	36,259,142	812
April	844,247	19.5	39,994,440	926	40,838,687	945
May	993,888	22.3	44,760,458	1,003	45,754,346	1,025
June	1,066,498	24.7	43,966,426	1,018	45,032,925	1,042
July	757,711	17.0	43,450,773	973	44,208,484	990
August	610,612	13.7	39,389,900	882	40,000,511	896
September	486,500	11.3	33,221,181	769	33,707,681	780
October	433,120	9.7	29,292,662	656	29,725,782	666
November	309,008	7.2	24,491,661	567	24,800,669	574
December	177,492	4.0	23,197,969	520	23,375,461	524
Annual	**6,910,908**	**---**	**408,161,022**	**---**	**415,071,930**	**---**

Notes:

(1) Estimated passive evaporation from the TSF underdrain collection pond equals free water evaporation (surface area of 4.07 acres @ 2' of freeboard) minus incident precipitation.

(2) Estimated active evaporation based on a daily evaporation chart for Model 1210 evaporator systems provided by Duane Thompson of Minetek on June 28, 2012. Four unit system assumed for AEWMS

(3) Total AEWMS evaporation potential equals estimated passive evaporation plus estimated active evaporation.

Table E5. Estimated AEWMS Program Water Balance for the First Year Following Closure

Month	Surface Water Runoff(1)	TSF Drain Down(1)	Total Inflows to AEWMS(3)	Total AEWMS Evaporation Potential(4)	Excess Evaporation Potential(5)
	gpm	gpm	gpm	gpm	gpm
January	7.3	514	521	551	29
February	7.7	500	508	664	157
March	2.3	486	488	812	324
April	1.3	472	473	945	472
May	5.8	458	464	1,025	561
June	12.4	444	456	1,042	586
July	88.3	430	518	990	472
August	46.8	416	463	896	433
September	35.2	402	437	780	343
October	7.6	388	395	666	270
November	6.9	374	381	574	193
December	16.5	360	376	524	147

Notes:
(1) Surface water runoff from the TSF embankment prior to regrading and cover placement. Runoff estimates from the Feasibility Level Design, 30,000 TPD Tailings Storage Facility, Copper Flat Project, Sierra County, New Mexico (Golder, 2015).
(2) Estimated TSF drain down from the conceptual Copper Flat TSF drain down curve developed herein.
(3) Total inflows to the AEWMS equals surface water runoff plus TSF drain down.
(4) Total AEWMS evaporation potential equals estimated passive evaporation plus estimated active evaporation.
(5) Excess evaporation potential equals total AEWMS evaporation potential minus total inflows to the AEWMS.

Table E6. Estimated PEWMS Program Water Balance Over 20 Year Operating Period

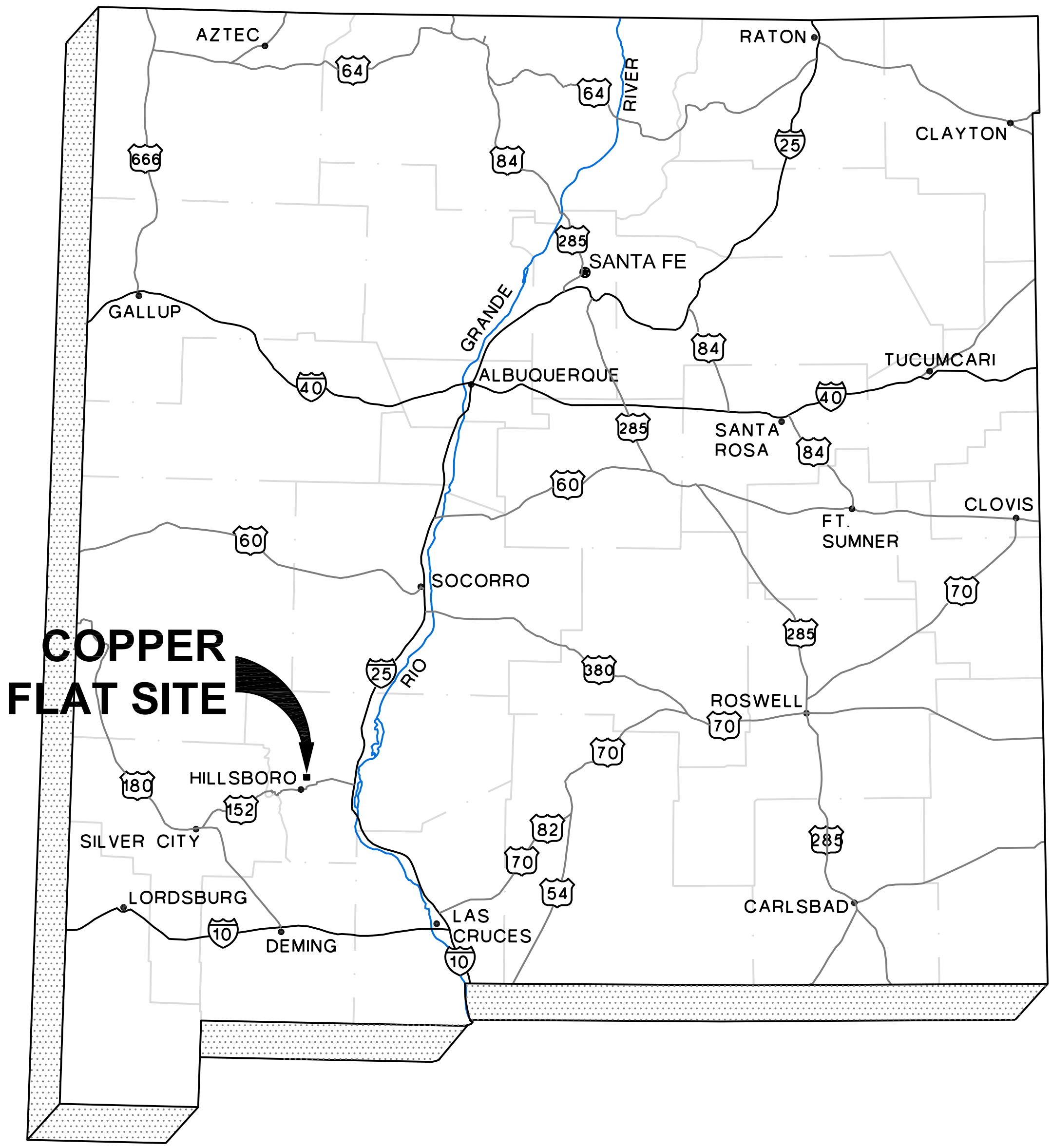
Year[1]	TSF Drain Down [2]	Passive Evaporation[3]	Excess Evaporation Potential[4]
	gpm	gpm	gpm
Short-Term Active Evaporative Water Management System Operation			
1	514	NA	NA
2	360	NA	NA
3	252	NA	NA
4	170	NA	NA
5	113	NA	NA
Long-Term Passive Evaporative Water Management System Operation			
6	67	70	3
7	51	70	18
8	44	70	26
9	39	70	31
10	33	70	36
11	28	70	42
12	23	70	47
13	21	70	49
14	18	70	52
15	12.9	70	57
16	11.3	70	58
17	10.3	70	60
18	9.8	70	60
19	9.3	70	61
20	7.2	70	63
21	5.1	70	65
22	4.1	70	66
23	3.9	70	66
24	3.8	70	66
25	3.6	70	66

Notes:
NA – Not applicable
(1) Closure year. Cessation of operations = Year 1.
(2) Maximum estimated drain down flows for the year based on conceptual Copper Flat TSF drain down curve.
(3) Estimated passive evaporation from the 21.6 acre ponded surface within the evaporation pond.
(4) Excess evaporation potential from the 21.6 acre surface within the evaporation pond.

FIGURES

STATE OF NEW MEXICO

NOT TO SCALE



DRAFT

CLIENT

THEMAC RESOURCES
NEW MEXICO COPPER CORPORATION
Environmentally Responsible. Community-Minded. Local Opportunities.

PROJECT
COPPER FLAT PROJECT
MINE RECLAMATION AND CLOSURE PLAN

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-10-05
PREPARED	CM
DESIGN	TS
REVIEW	TS
APPROVED	TS

TITLE
SITE LOCATION MAP

PROJECT No.	PHASE	Rev.	FIGURE
1531453	0300	0	E1

Path: \\albuquerque\Cad\2015 Projects\153-1453\Production\ | File Name: 1531453-0300-E1.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

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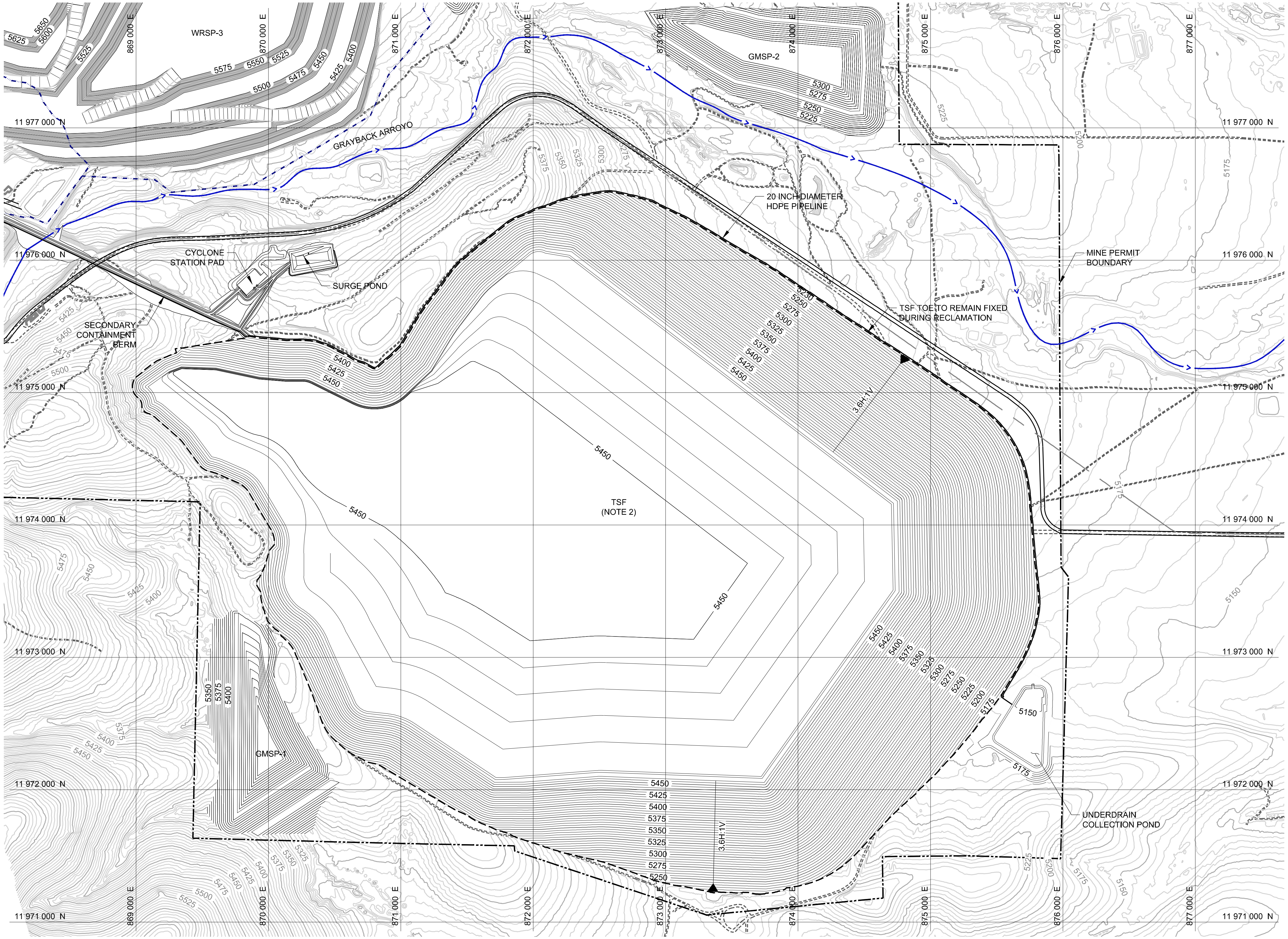

LEGEND

5400	EXISTING GROUND CONTOURS (ft-MSL)
5400	PROPOSED DESIGN CONTOURS (ft-MSL) (NOTES 1 AND 2)
	MINE PERMIT BOUNDARY
	WATERSHED BOUNDARY (BY OTHERS)
	EXISTING DIVERSION OR ARROYO
	EXISTING ROAD
	SLOPE INDICATOR
1%	GRADE INDICATOR
WRSP	WASTE ROCK STOCKPILE
GMSP	GROWTH MEDIA STOCKPILE
TSF	TAILING STORAGE FACILITY
AEWMS	ACTIVE EVAPORATION WATER MANAGEMENT SYSTEM

NOTES

1. FINAL BUILDOUT TOPOGRAPHY FOR THE PIT, WRSPs, AND GMSPs WAS DEVELOPED BY OTHERS AND PROVIDED BY NMCC.
2. FINAL BUILDOUT TOPOGRAPHY FOR THE TSF WAS DEVELOPED BY GOLDER AND IS FROM THE 30K TPD TAILINGS STORAGE FACILITY FEASIBILITY DESIGN REPORT (GOLDER, 2015).

PRELIMINARY FOR AGENCY REVIEW

0 400 800
1" = 400' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
C	2016-09-10	ISSUED FOR AGENCY REVIEW	HNL	HNL	TS	TS
B	2016-09-09	ISSUED FOR CLIENT REVIEW	HNL	HNL	TS	TS
A	2016-09-02	ISSUED FOR INTERNAL REVIEW	HNL	HNL	TS	TS

CLIENT

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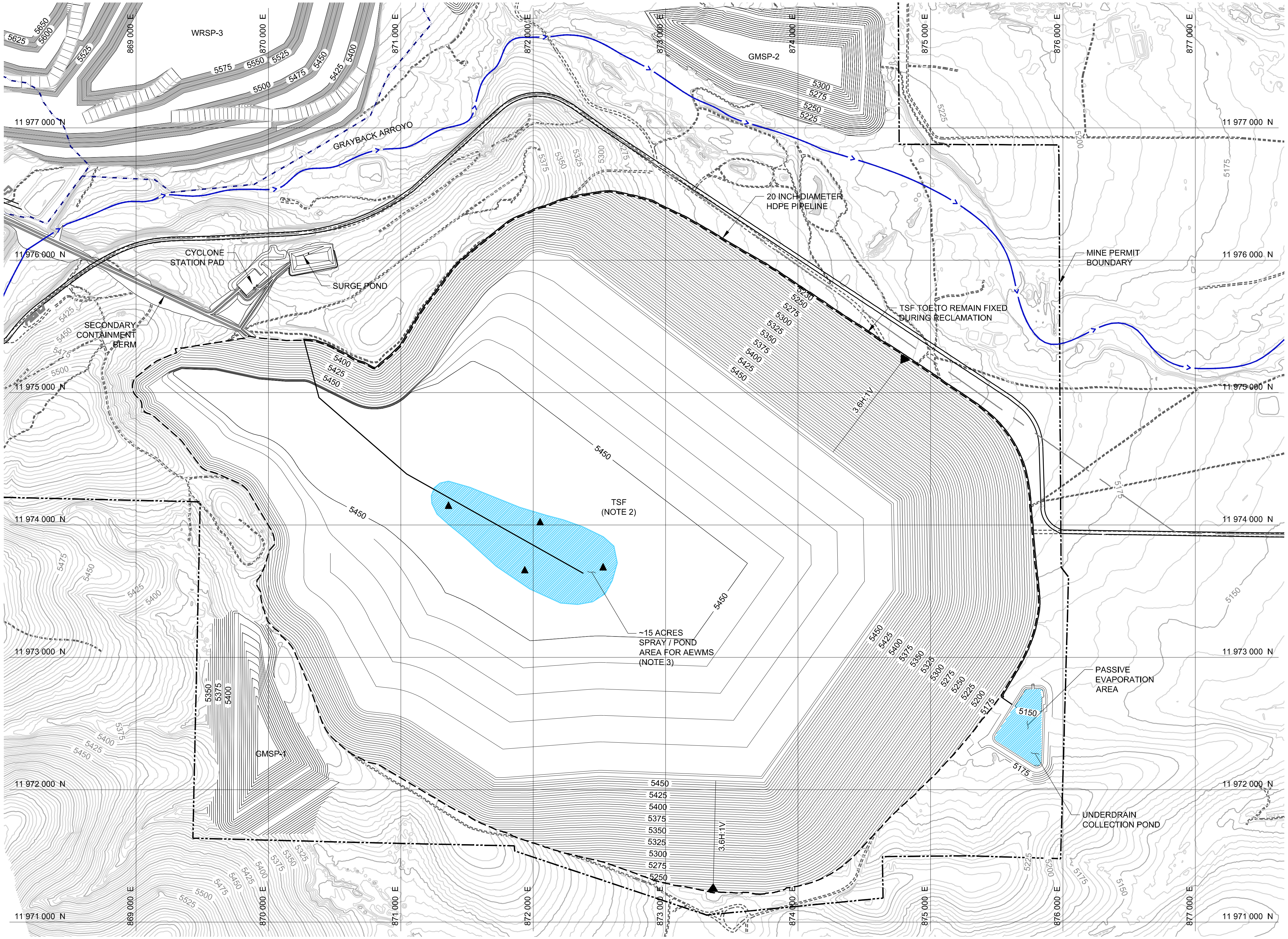
PROJECT
COPPER FLAT PROJECT
MINE RECLAMATION AND CLOSURE PLAN

TITLE
GENERAL ARRANGEMENT TSF AREA AT FINAL BUILT OUT

PROJECT NO.	CONTROL	REV.	15 of 25	FIGURE
1531453	0300	C		E2

Path: \\tucson\cadd\2015 Projects\1531453\PRODUCTION\0300\ | File Name: 1531453-0300-E2.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D



LEGEND

5400	EXISTING GROUND CONTOURS (ft-MSL)
5400	PROPOSED DESIGN CONTOURS (ft-MSL) (NOTES 1 AND 2)
	MINE PERMIT BOUNDARY
	WATERSHED BOUNDARY (BY OTHERS)
	EXISTING DIVERSION OR ARROYO
	EXISTING ROAD
	SLOPE INDICATOR
1%	GRADE INDICATOR
WRSP	WASTE ROCK STOCKPILE
GMSP	GROWTH MEDIA STOCKPILE
TSF	TAILING STORAGE FACILITY
AEWMS	ACTIVE EVAPORATION WATER MANAGEMENT SYSTEM
▲	MECHANICAL SPRAY SYSTEM

NOTES

1. FINAL BUILDOUT TOPOGRAPHY FOR THE PIT, WRSPs, AND GMSPs WAS DEVELOPED BY OTHERS AND PROVIDED BY NMCC.
2. FINAL BUILDOUT TOPOGRAPHY FOR THE TSF WAS DEVELOPED BY GOLDER AND IS FROM THE 30K TPD TAILINGS STORAGE FACILITY FEASIBILITY DESIGN REPORT (GOLDER, 2015).
3. APPROXIMATE LOCATION OF SPRAY/POND. SIZE AND LOCATION MAY BE ADJUSTED TO MAXIMIZE EVAPORATION CAPACITY BASE. ON ACTUAL FLOWS TO BE MANAGED.

PRELIMINARY FOR AGENCY REVIEW

0 400 800
1" = 400' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
C	2016-09-10	ISSUED FOR AGENCY REVIEW	HNL	HNL	TS	TS
B	2016-09-09	ISSUED FOR CLIENT REVIEW	HNL	HNL	TS	TS
A	2016-09-02	ISSUED FOR INTERNAL REVIEW	HNL	HNL	TS	TS

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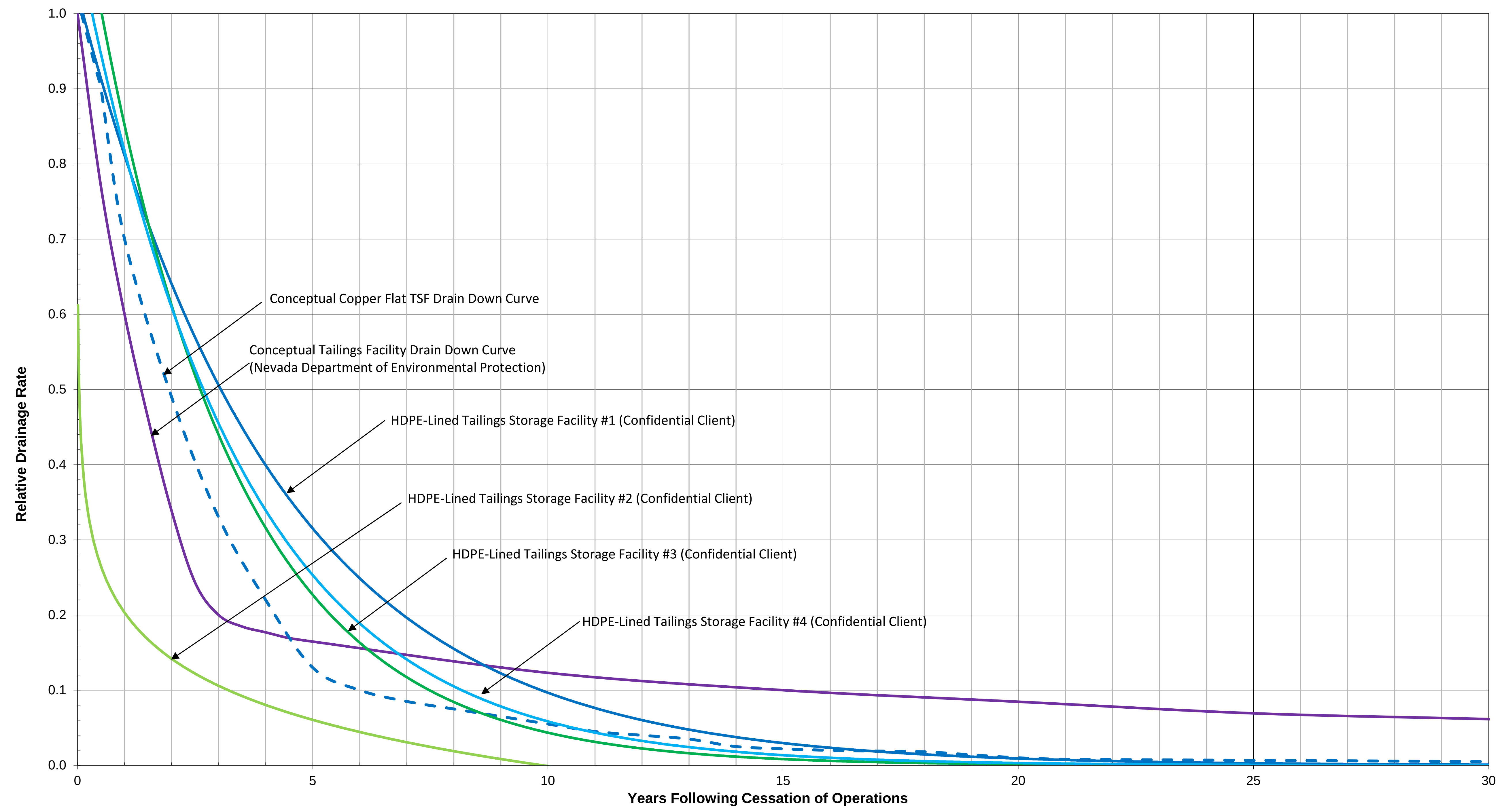
PROJECT
COPPER FLAT PROJECT
MINE RECLAMATION AND CLOSURE PLAN

TITLE
ACTIVE EVAPORATION WATER MANAGEMENT SYSTEM LAYOUT

PROJECT NO.	CONTROL	REV.		FIGURE
1531453	0300	C	15 of 25	E3

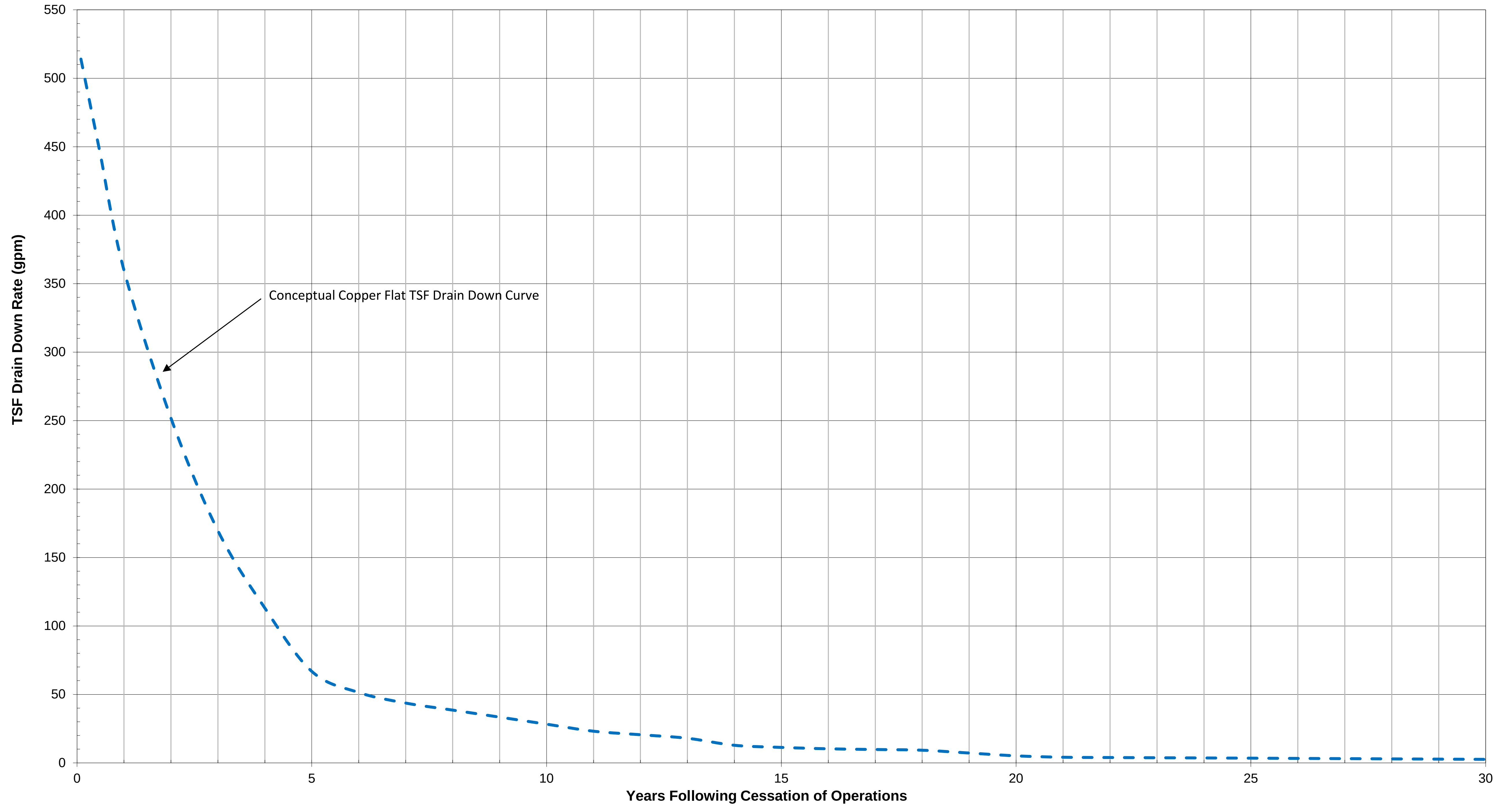
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

Path: \\tucson\cadd\2015 Projects\1531453\PRODUCTION\0300\ | File Name: 1531453-0300-E3.dwg



Golder Associates — **Albuquerque, New Mexico**

TITLE	**Example Tailings Storage Facility Drain Down Curves**		
CLIENT/PROJ **THEMAC Resources Group Ltd.** **Copper Flat Mine Project**	DRAWN TS	DATE 09/29/2016	JOB NO. 153-1453
	CHECKED TS	SCALE NA	**FIGURE E4**
	REVIEWED TS	FILE Copper Flat Water Balance 09072016	

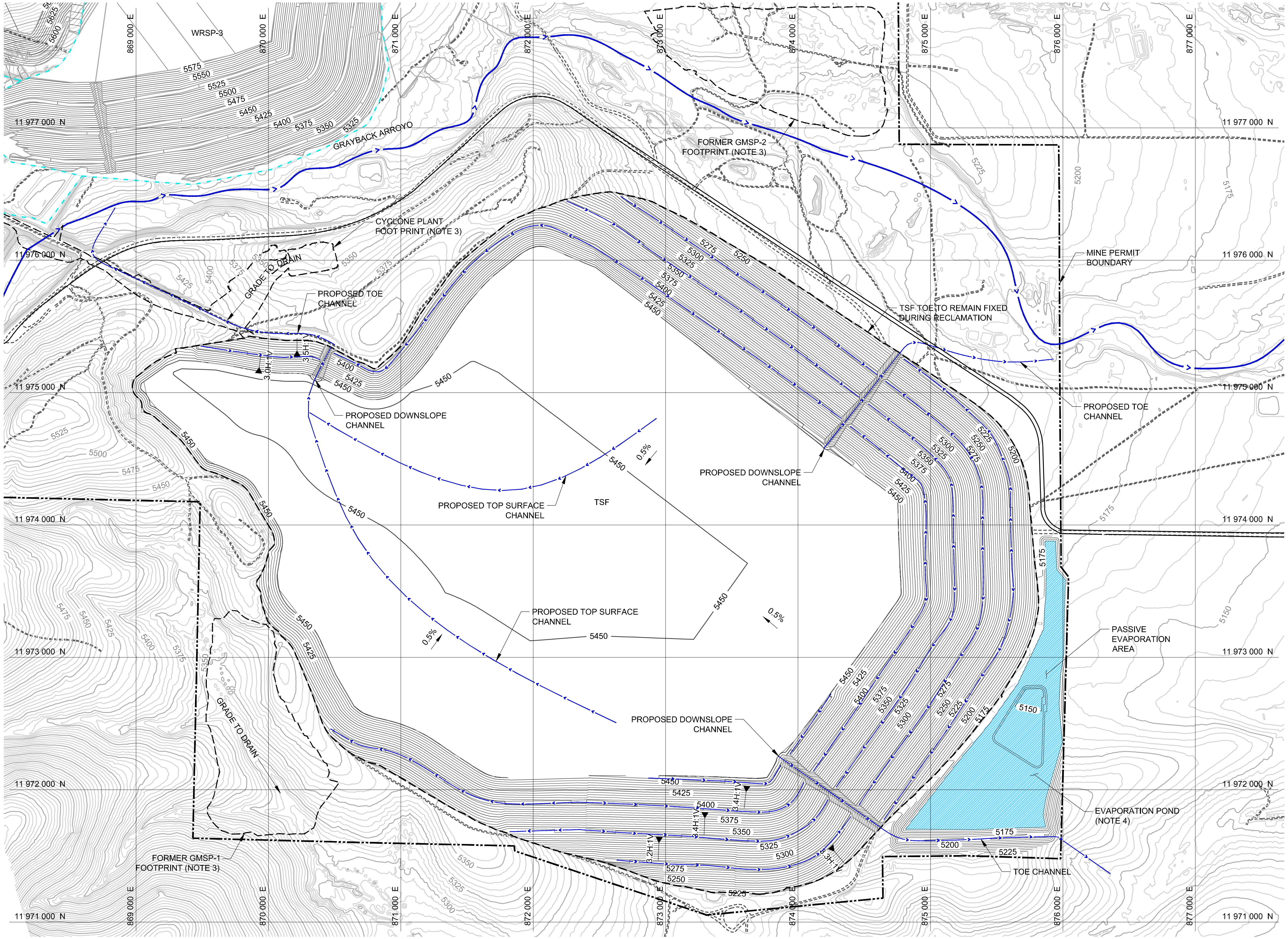


Golder Associates
Albuquerque, New Mexico

TITLE

Conceptual Copper Flat TSF Drain Down Curve

CLIENT/PROJ **THEMAC Resources Group Ltd.** **Copper Flat Mine Project**	DRAWN TS	DATE 09/29/2016	JOB NO. 153-1453
	CHECKED TS	SCALE NA	**FIGURE E5**
	REVIEWED TS	FILE Copper Flat Water Balance 09072016	



LEGEND

5400	EXISTING GROUND CONTOURS (ft-MSL)
5400	PROPOSED DESIGN CONTOURS (ft-MSL) (NOTE 5)
	MINE PERMIT BOUNDARY
	RECLAMATION WATERSHED BOUNDARY
	EXISTING DIVERSION OR ARROYO
	PROPOSED CHANNEL CENTERLINE (APPROXIMATE)
	EXISTING ROAD
	SLOPE INDICATOR
1%	GRADE INDICATOR
WRSP	WASTE ROCK STOCKPILE
TSF	TAILING STORAGE FACILITY

NOTES

1. FINAL BUILDOUT TOPOGRAPHY FOR THE PIT, WRSPs, AND GMSPs WAS DEVELOPED BY OTHERS AND PROVIDED BY NMCC.
2. RECLAMATION DESIGN SHALL UTILIZE 3H:1V INTERBENCH REGRADE SLOPES AND 200 FOOT INTERBENCH SLOPE LENGTHS PER NMAC 20.6.7.33. C(3). A 0.5% (MIN.) TOP SURFACE REGRADE GRADIENT SHALL BE ESTABLISHED PER NMAC 20.6.7.33. C(1). A 25 FOOT BENCH WIDTH, 1% BENCH CROSS SLOPE GRADIENT AND 1% LONGITUDINAL BENCH SLOPE GRADIENT WILL BE UTILIZED FOR STORMWATER CONVEYANCE.
3. FOOTPRINT OF FORMER GROWTH MEDIA STOCKPILES WILL BE GRADED TO APPROXIMATE SURROUNDING TOPOGRAPHY, RIPPED AND REVEGETATED.
4. EVAPORATION POND WILL BE CONSTRUCTED IN YEAR 5 FOLLOWING CESSATION OF MINING, NEAR THE END OF THE ACTIVE EVAPORATION PROGRAM. EVAPORATION POND WILL BE RECLAIMED AT THE END OF THE PASSIVE EVAPORATION PROGRAM.
5. PROPOSED DESIGN CONTOURS REPRESENT THE RECLAMATION SUBGRADE, PRE-COVER PLACEMENT TOPOGRAPHY. THIS FACILITY WILL HAVE 3FT OF COVER SO FINAL RECLAIMED SURFACE WILL BE 3RT HIGHER THAN CONTOURS SHOWN.

PRELIMINARY FOR AGENCY REVIEW

0 400 800
1" = 400' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
C	2016-09-30	ISSUED FOR AGENCY REVIEW	HNL	HNL	TS	TS
B	2016--09-09	ISSUED FOR CLIENT REVIEW	HNL	HNL	TS	TS
A	2016-09-02	ISSUED FOR INTERNAL REVIEW	HNL	HNL	TS	TS

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PROJECT
COPPER FLAT PROJECT
MINE PERMIT CLOSURE DESIGN

TITLE
PASSIVE EVAPORATION WATER MANAGEMENT SYSTEM LAYOUT

PROJECT NO.	CONTROL	REV.		FIGURE
1531453	0300	C	16 of 25	E6

Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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