COLORADO OPERATIONS
Henderson Operations
P.O. Box 68
Empire, CO 80438
Phone (303) 569-3221
Fax (303) 569-2830

March 8, 2021

Sent Via ePermitting Portal

Mr. Peter Hays
Colorado Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, Colorado 80203

RE: 2020 Annual Report, Henderson Mine and Mill, Permit No M-1977-342

Dear Mr. Hays:

Climax Molybdenum Company (Climax) is submitting its 2020 Colorado Division of Reclamation, Mining and Safety (DRMS) Annual Report and DRMS Annual Report Form for the Henderson Mine and Mill (Permit No. M-1977-342), along with payment for the required annual fee of $1,150.00.

If you have any questions or need additional information, please do not hesitate to contact me at (720) 942-3631.

Sincerely,

Geoff Niggeler
Chief Environmental Engineer
Climax Molybdenum Company
Henderson Operations

Submitted to Portal:

- Payment of $1,150.00
- DRMS Annual Report Form (electronic form)
- Henderson Mine and Mill Annual Reclamation Report (pdf attachment)

1.0 Henderson Mine

1.1 Disturbance

New disturbance at the Mine in 2020 was limited to incremental caving of the glory hole. No changes were made to any of the mine openings (shafts). A site map of the Henderson Mine indicating affected land boundary and disturbance areas is included in Attachment A. Although no new disturbances were made in 2020, Amendment AM-07 to the reclamation permit updated the affected land acreage from 4117 acres to 4360.2 acres.

1.2 Interim Reclamation

Interim reclamation was not carried out at the Henderson Mine in 2020.

1.3 Other Activities

1.3.1 – Weed Control

Habitat Management, Inc., a licensed commercial pesticide applicator, performed weed management activities in early July and again in early August 2020.

Canada thistle, yellow toadflax, mayweed chamomile, common mullein, and oxeye daisy were treated throughout the main mine facilities area, the URAD area, and along County Road 202 between URAD and the Henderson Mine. Herbicide applications were spot-applied to targeted weed species.

The herbicides used for treatment include: Milestone, Telar XP (Chlorosulfuran), Weedar 64 (2,4-D Amine), Ranger Pro (Glyphosphate), and Method. Induce and MSO were utilized as a surfactant and Hi-Light blue marker dye was added to applications to allow greater visibility of treated areas.

Ranger Pro and Method were applied to the perimeter of the gas stations, natural gas meter building, compressor building, used oil pump building, bulk oil storage building, and the mine's air vents. The smaller electrical substation was also treated whereas other substations were inspected and found to be in good order.

Similar to past years, the mine property was thoroughly inspected for listed noxious weeds species. Through precision tracking via GPS application monitoring, the weed management contractor applied herbicide to approximately 534 acres (combined Mine and URAD).

1.3.2 – Water Quality Data

Water quality data will be provided in the Annual Water Quality Data Report, due to the DRMS by May 31, per the approved Groundwater Management Plan (TR-16).

2.0 Henderson Mill

2.1 Disturbance

The Mill disturbances for 2020 included only the area inundated by the continuous tailing impoundment rise. A site map of the Henderson Mill indicating affected land boundary and disturbance areas is included in Attachment A.

2.2 Interim Reclamation

Interim reclamation was not carried out at the Henderson Mill in 2020.

2.3 Other Activities

2.3.1 – Weed Control

For 2020, Henderson Mill received two weed treatments in July, with approximately 1,400 acres treated. The two treatments covered the following areas: Tailings impoundment access roads and roadsides, the gravel pit, outlying building surrounding the Tailings impoundment, north topsoil stockpile and non-industrial areas north of the tailings impoundment along Lost Creek ditch.

These areas were treated for the following noxious weeds: Bull thistle, Canada thistle, Common mullein, Houndstongue, Mayweed chamomile, Musk thistle, Oxeye daisy and Yellow toadflax.

The herbicides used for treatment include: Weedar 64 (2,4-D), Transline (Clopyralid), Vastlan, Induce (a nonionic adjuvant) and Blue Hi-Lite indicator dye.

2.3.2 – Water Quality Data

Water quality data will be provided in the Annual Water Quality Report, due to the DRMS by May 31, per the approved Groundwater Management Plan (TR-16).

2.3.3 – Flood Storage Capacity

Analysis of flood storage capacity in the Mill tailings impoundment was carried out by W.W. Wheeler, per DRMS requirements stipulated for Technical Revision TR-14. This analysis is included as Attachment B.

2.3.4 – 3-Dam Seepwater Line Leak-Down Test

The annual 3-Dam seepwater line leak-down test for 2020, per DRMS requirements stipulated in TR-09, was completed on June 30, 2020. The seepwater lines held static pressures over a 24-hour period, as designed. See test report in Attachment C.

2.3.5 – 3-Dam Seep Water Return System Improvements

Work began in the fall of 2019 to add additional cleanout locations to the seep water return pipeline mentioned in Section 2.3.4 above. Technical Revision TR-31 was submitted in July 2019 with the work being completed in late 2019. This is being included as part of the 2020 annual report since final documentation was submitted in March 2020 for TR-31.

2.3.7- 3-Dam Buttress Project

Phase II of the 3-Dam Buttress Project submitted as TR-32 in the spring of 2020 was completed in 2020. This Phase consisted of minor infrastructure improvements, placement of filter material, and placement of buttress material. Close-out documentation for TR-32 is currently being prepared.

2.3.8- Seep Spoils Storage Area

Construction of an area used by operations to store tailing and sediment cleaned from the seepage canals for use as erosion repair was constructed in 2020. No material was placed in this area pending approval of a technical revision. The technical revision (TR-33) was submitted and approved in early 2021 and this area will begin to be utilized in the spring of 2021.

2.3.7 – Tailing Storage Facility Annual Report
AECOM, the engineer of record for the Henderson Mill Tailing Storage Facility (TSF), has provided a letter that contains observations, updates on projects, and any recommendations to ensure the TSF is operated and maintained properly. The report is included in Attachment D.

3.0 Anticipated 2021 Activities

3.1 Prospecting

No prospecting activities are currently planned for 2021.

3.2 3-Dam Buttress

Engineering for Phase 3 of the 3-Dam Buttress has commenced and will likely be completed in 2021, followed by a TR request. Construction is anticipated to commence in 2023 and 2024.

3.3 Gravel Pit

Areas near the entrance of the gravel pit will continue to be used to stockpile materials delivered for the 3-Dam Buttress Project, roadway improvements, or emergency erosion control aggregates.

3.4 Reclamation

No reclamation is planned for calendar year 2021.

3.5 Tailings Impoundment Reclamation Test Plots

As part of the ongoing efforts to develop a viable closure plan for the tailings impoundment, Henderson will be constructing reclamation test plots on the tailings sands in 2021. The test plots will be constructed in 2021 and potentially 2022 with ongoing soil performance being monitored for an anticipated 5-10 years into the future.

4.0 Financial Warranty

The approved closure cost estimate for Henderson Operations is $171,125,253. On October 1, 2020, Henderson proposed to have the financial warranty for these costs be comprised in the form of a combination of corporate surety bonds, a letter of credit, water rights and real property assets. Pursuant to Division approval, Henderson currently maintains a financial warranty of $139,038,674 in the form of corporate surety bonds, a letter of credit and water rights assets. Henderson's proposal to add the remaining $32,086,579 in the form of land and water rights assets is currently under consideration by the Division. Henderson is working with the Division on the process to support its review of this proposal and obtain approval from the MLRB. Updated valuations for water rights currently held in the financial warranty were included in the October 2020 package and show that the assets have increased in value.

Attachment A

Figures

Ranger Gulch Topsoil Stockpile

North Topsoil Stockpile

Tailings Impoundment

Williams Fork River

Mill

Portal

0 750 1,500 3,000 4,500 6,000 Feet

LOCATION MAP

MAP FEATURES

- PROPERTY BOUNDARY
- DISTURBANCE AREA
- XCEL ENERGY EASEMENT
- TAILINGS IMPOUNDMENT
- LAKE / POND
- EXISTING TOPSOIL STOCKPILES
- PLANNED TOPSOIL STOCKPILES
- RECLAMATION AREAS
- BUILDING
- UNIMPROVED ROAD
- IMPROVED ROAD
- CONVEYOR
- TRAIL
- PERENNIAL STREAM
- INTERMITTENT STREAM
- ULTIMATE INTERCEPTOR CANAL
- GRAVEL PIT
- AFFECTED LAND BOUNDARY

Contour Interval: 25 feet

REVISION	DATE	AUTHOR
Developed in ArcGIS for 2010 Annual Report	3/4/11	MT
Revised for 2011 Annual Report	2/22/12	MT
Updated for 2012 Annual Report: Added Ranger Gulch Topsoil Stockpile & Gravel Pit	2/26/13	MT
Revised for 2013 Annual Report	2/27/14	MT
Revised for 2014 Annual Report	2/24/2015	MT
Updated dates for 2015 Annual Report	2/29/2016	MT
Updated dates for 2016 Annual Report	3/3/2017	TH
Updated dates and imagery	3/4/2019	AP
Updated dates for 2020 Annual Report	3/3/2021	MT

Climax Molybdenum
A Freeport-McMoRan Company
HENDERSON OPERATIONS
1746 County Road
Empire, Colorado 80438

HENDERSON MILL

MLRB Permit No. M-77-342
Annual Reclamation Report
March 3, 2021

Aquionix EHS Services
5545 W. 56th Ave
Arvada, CO 80002
303-289-7520
www.aquionix.com

DESIGNED BY:
DRAWN BY: MT(Aquionix)
DATE DRAWN: 3/4/11

SCALE: 1:20,000

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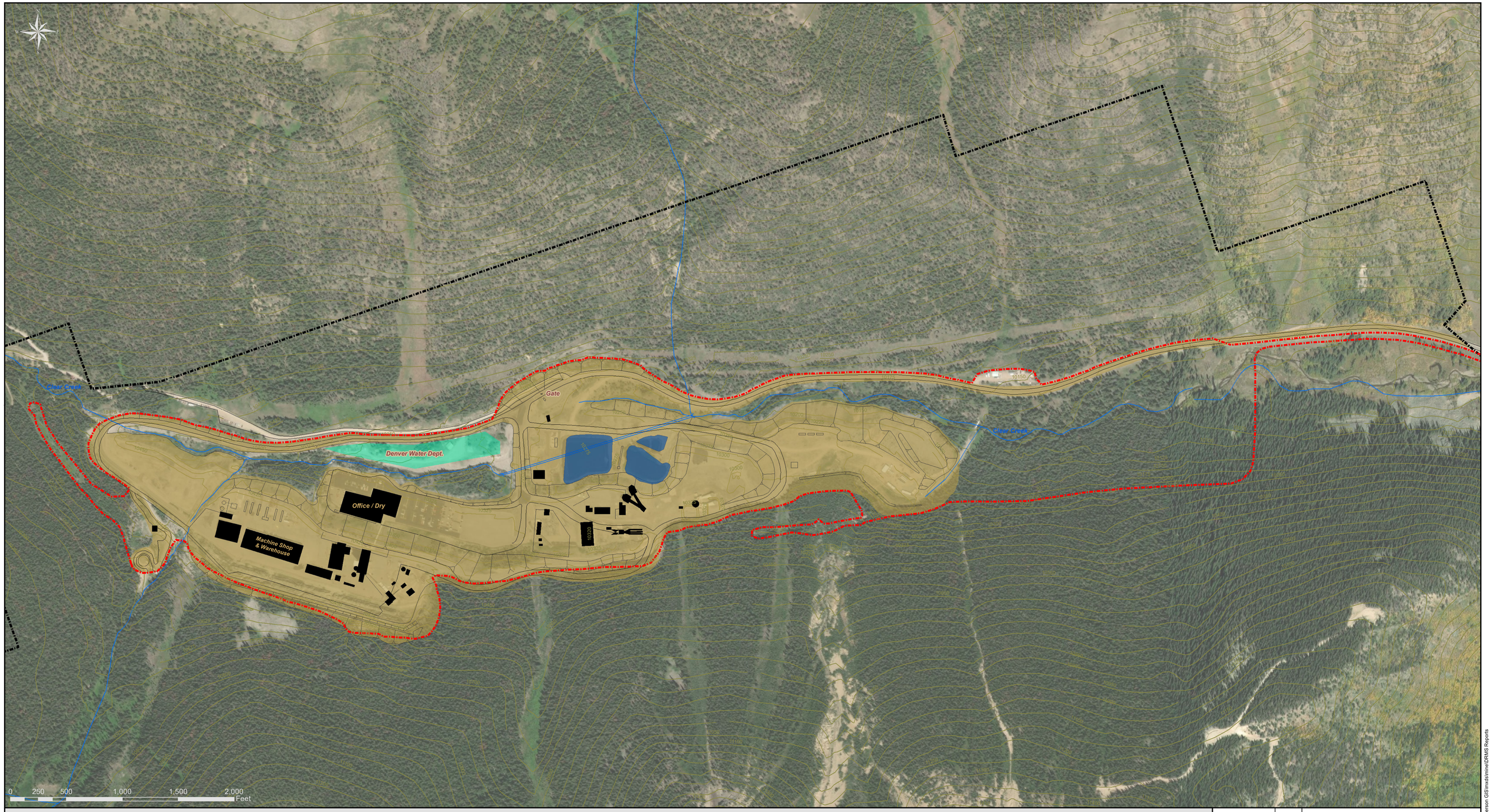

LOCATION MAP

MAP FEATURES

- DISTURBED AREA
- TOPSOIL STOCKPILES
- RECLAMATION AREAS
- LAKE / POND
- BUILDING
- ROAD
- PROPERTY BOUNDARY
- AFFECTED LAND BOUNDARY
- STREAM / DITCH
- DENVER WATER DEPT.

Contour Interval: 50 feet

REVISION	DATE
Developed in ArcGIS for 2010 Annual Report	3/4/11
Revised for 2011 Annual Report	2/22/12
Revised for 2012 Annual Report	2/27/13
Revised for 2013 Annual Report	2/26/14
Revised for 2014 Annual Report	2/24/15
Revised for 2015 Annual Report	3/4/16
Revised for 2016 Annual Report	3/3/2017
Updated dates and imagery	3/4/2019
Revised for 2020 Annual Report	3/4/2021

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Empire, Colorado 80438

HENDERSON MINE

MLRB Permit No. M-77-342
Annual Reclamation Report
March 3, 2021

DESIGNED BY:

DRAWN BY: MT/KV (Aquionix)

DATE DRAWN: 8/7/2017

SCALE: 1:4,800

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Henderson Mine

Glory Hole

Lower Urad Reservoir

Pond 5

Pond 2

Pond 1

Urad WWTP

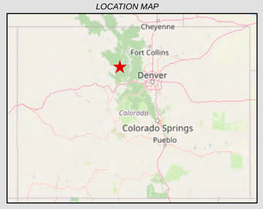
Sludge 2

Sludge 1

Upper Tailings Impoundment

0 375 750 1,500 2,250 3,000 Feet

LOCATION MAP



MAP FEATURES

- DISTURBED AREA
- TOPSOIL STOCKPILES
- RECLAMATION AREAS
- LAKE / POND
- BUILDING
- ROAD
- PROPERTY BOUNDARY
- STREAM / DITCH

REVISION	DATE	AUTHOR
Developed in ArcGIS for 2011 Annual Report	2/17/12	MT
Revised for 2012 Annual Report	2/28/13	MT
Revised for 2013 Annual Report	2/26/14	MT
Revised for 2014 Annual Report	2/24/15	MT
Updated dates for 2015 Annual Report	2/29/16	MT
Updated dates for 2016 Annual Report	3/3/17	TH
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HENDERSON MINE - URAD

MLRB Permit No. M-77-342
Annual Reclamation Report
March 3, 2021

DESIGNED BY:

DRAWN BY: MT (Aquionix)

DATE DRAWN: 2/17/2012

SCALE:1:7,500

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Attachment B

Mill Tailing Impoundment
Flood Storage Capacity Analysis

W. W. WHEELER
& ASSOCIATES, INC.
Water Resources Engineers
WWW.WWWHEELER.COM

February 16, 2021

Mr. Miguel Hamarat
Climax Molybdenum Company, Henderson Mine
1746 County Road 202
Empire, CO 80438

Re: ***#1333.0 - Henderson Mill***
TSF Flood Storage

Dear Miguel:

As requested, we have evaluated the availability of flood storage capacity in the Henderson tailing storage facility (TSF) using information from the pond surveys. The fall survey of the beach and pool area was performed in October and November. Figure 1 is the pond contour map that was generated by Wheeler from the fall survey point data. The survey shows that the average dam crest elevation of 1 Dam at the end of the spigot deposition season is about 8884.5 feet, which is a 2.0-foot increase from last year. The minimum elevation surveyed along the dam crest was 8883.3 feet. This information, as well as other characteristics of the TSF, is summarized in the table in the upper right-hand corner of the TSF map drawing. Table 1 and Figure 2 is the elevation-capacity data for the impoundment that was generated from the fall 2020 contour map. Note that this data is representative of the TSF at the time of the pool survey and changes continuously as additional tailing is deposited.

One of the primary uses of the survey data is to evaluate the flood storage capacity conditions in the water system. As summarized on Figure 1, at the approximate time of the fall survey there was a total system surcharge storage capacity of about **10,904 acre-feet** in the system. This capacity includes both the TSF and East Branch Reservoir and is based on 0.5 feet of residual freeboard below the minimum dam crest elevation of 8,883.3' and a October 31st water level of 8,869.0 feet. The flood storage requirement for the system is **3,582 acre-feet**. This requirement is based on hydrologic modeling of the probable maximum precipitation (PMP) event. The available flood storage capacity in the system at

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the time of the survey significantly exceeds the storage requirement. However, this excess capacity will decrease throughout the coming year as additional inflows to the system occur and a portion of the storage space is filled with deposited tailing.

A relatively accurate determination of the flood storage capacity in the impoundment can be made at the time of the spring and fall pond surveys. An operations model has been developed to track water levels and estimate the flood storage availability in the system between surveys. This model is updated by Wheeler on a monthly basis. One of the reports generated by this model is the attached TSF Water Level Report (Figure 3). This graph shows the actual water level in the TSF as compared to the flood pool level in the pond, which is defined as the level corresponding to 3,582 acre-feet of available capacity. Note that the actual water level did not exceed the flood pool level at any time in 2020. This shows that the required flood storage space was maintained in the system throughout the 2020 calendar year.

If you have any questions regarding the enclosed information, or if you require additional information, please call.

Sincerely,
W. W. Wheeler and Associates, Inc.

Steven M. Maly, P.E.

CC: Emily Niggeler, Henderson Mill (via e-mail)
Geoff Niggeler, Henderson Mill (via e-mail)
Ron Hickman, Henderson Mill (via e-mail)
Aaron Hilshorst, Freeport McMoRan (via e-mail)
Katie Kruger, Freeport McMoRan (via e-mail)

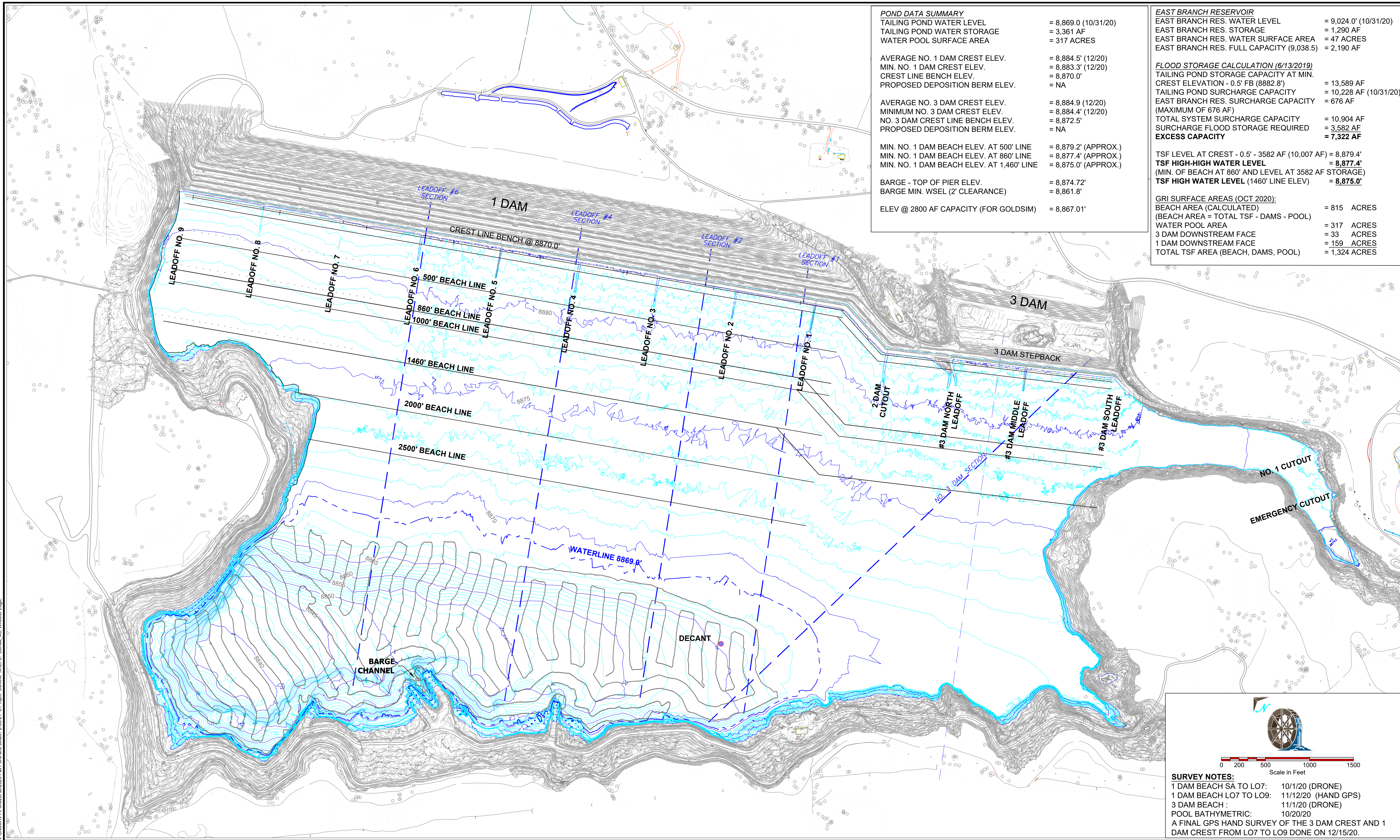
TABLE 1
Henderson TSF
Elevation-Area-Capacity

Survey Data:

Bathymetric	Oct 20, 2020
1 Dam Beach	Oct 1, 2020
3 Dam Beach	Nov 1, 2020

Elevation-Area-Capacity Table				Beach Width	Beach Width	Beach Width	Beach Width
Water Elevation	Surface Area		Storage Capacity	#4 LO	#6 LO	3-Dam	Minimum
(feet)	(sq. ft.)	(acres)	(ac-ft)	(ft)	(ft)	(ft)	(ft)
8,839.0	15,262	0.35	0.0	3650+	3690+	4950+	
8,840.0	482,518	11.08	5.7	3650+	3690+	4950+	
8,841.0	791,444	18.17	20.3	3650+	3690+	4950+	
8,842.0	1,049,151	24.09	41.5	3650+	3690+	4950+	
8,843.0	1,275,819	29.29	68.2	3650+	3690+	4950+	
8,844.0	1,484,106	34.07	99.8	3650+	3690+	4950+	
8,845.0	1,677,028	38.50	136.1	3650+	3690+	4950+	
8,846.0	1,832,067	42.06	176.4	3650+	3690+	4950+	
8,847.0	1,986,903	45.61	220.2	3650+	3690+	4950+	
8,848.0	2,152,439	49.41	267.7	3650+	3690+	4950+	
8,849.0	2,363,934	54.27	319.6	3650+	3690+	4950+	
8,850.0	2,584,801	59.34	376.4	3650+	3690+	4950+	
8,851.0	2,795,439	64.17	438.1	3650+	3690+	4950+	
8,852.0	3,026,744	69.48	505.0	3650+	3690+	4950+	
8,853.0	3,330,537	76.46	577.9	3650+	3690+	4950+	
8,854.0	3,760,429	86.33	659.3	3650+	3690+	4950+	
8,855.0	4,273,190	98.10	751.6	3650+	3690+	4950+	
8,856.0	4,721,288	108.39	854.8	3650+	3690+	4950+	
8,857.0	5,152,726	118.29	968.1	3650+	3690+	4950+	
8,858.0	5,652,305	129.76	1,092.2	3650+	3690+	4950+	
8,859.0	6,211,855	142.60	1,228.3	3650+	3690+	4950+	
8,860.0	6,749,585	154.95	1,377.1	3650+	3690+	4950+	
8,861.0	7,306,586	167.74	1,538.5	3650+	3690+	4950+	
8,862.0	7,871,399	180.70	1,712.7	3650+	3690+	4950+	
8,863.0	8,452,527	194.04	1,900.1	3650+	3690+	4950+	
8,864.0	9,109,315	209.12	2,101.6	3650+	3690+	4950+	
8,865.0	9,755,564	223.96	2,318.2	3650+	3690+	4950+	3,627
8,866.0	10,410,702	239.00	2,549.6	3,616	3,655	4950+	3,520
8,867.0	11,103,674	254.91	2,796.6	3,538	3,582	4,861	3,423
8,868.0	12,143,936	278.79	3,063.4	3,385	3,461	4,484	3,232
8,869.0	13,815,237	317.15	3,361.4	3,185	3,246	4,126	3,000
8,870.0	16,520,027	379.25	3,709.6	2,986	3,031	3,866	2,768
8,871.0	19,086,730	438.17	4,118.3	2,785	2,815	3,603	2,536
8,872.0	21,815,457	500.81	4,587.8	2,594	2,608	3,292	2,305
8,873.0	24,488,458	562.18	5,119.3	2,239	2,300	2,921	2,053
8,874.0	27,200,319	624.43	5,712.6	1,996	2,074	2,610	1,741
8,875.0	30,032,842	689.46	6,369.6	1,780	1,691	2,263	1,469
8,876.0	33,248,218	763.27	7,095.9	1,442	1,579	1,857	1,168
8,877.0	35,958,536	825.49	7,890.3	1,208	1,221	1,495	928
8,878.0	38,409,264	881.76	8,743.9	1,061	995	1,310	686
8,879.0	40,712,874	934.64	9,652.1	919	747	1,094	492
8,880.0	43,373,291	995.71	10,617.3	687	662	805	322
8,881.0	45,495,112	1,044.42	11,637.4	533	486	621	242
8,882.0	47,401,448	1,088.19	12,703.7	381	332	418	134
8,883.0	48,953,847	1,123.83	13,809.7	167	201	160	23
8,884.0	50,213,982	1,152.75	14,948.0	59	97	69	
8,885.0	50,981,274	1,170.37	16,109.5				

* All other values are interpolated from this table.



POND DATA SUMMARY

TAILING POND WATER LEVEL	= 8,869.0 (10/31/20)
TAILING POND WATER STORAGE	= 3,361 AF
WATER POOL SURFACE AREA	= 317 ACRES
AVERAGE NO. 1 DAM CREST ELEV.	= 8,884.5' (12/20)
MIN. NO. 1 DAM CREST ELEV.	= 8,883.3' (12/20)
CREST LINE BENCH ELEV.	= 8,870.0'
PROPOSED DEPOSITION BERM ELEV.	= NA
AVERAGE NO. 3 DAM CREST ELEV.	= 8,884.9 (12/20)
MINIMUM NO. 3 DAM CREST ELEV.	= 8,884.4' (12/20)
NO. 3 DAM CREST LINE BENCH ELEV.	= 8,872.5'
PROPOSED DEPOSITION BERM ELEV.	= NA
MIN. NO. 1 DAM BEACH ELEV. AT 500' LINE	= 8,879.2' (APPROX.)
MIN. NO. 1 DAM BEACH ELEV. AT 860' LINE	= 8,877.4' (APPROX.)
MIN. NO. 1 DAM BEACH ELEV. AT 1,460' LINE	= 8,875.0' (APPROX.)
BARGE - TOP OF PIER ELEV.	= 8,874.72'
BARGE MIN. WSEL (2' CLEARANCE)	= 8,861.8'
ELEV @ 2800 AF CAPACITY (FOR GOLDSIM)	= 8,867.01'

EAST BRANCH RESERVOIR

EAST BRANCH RES. WATER LEVEL	= 9,024.0' (10/31/20)
EAST BRANCH RES. STORAGE	= 1,290 AF
EAST BRANCH RES. WATER SURFACE AREA	= 47 ACRES
EAST BRANCH RES. FULL CAPACITY (9,038.5)	= 2,190 AF

FLOOD STORAGE CALCULATION (6/13/2019)

TAILING POND STORAGE CAPACITY AT MIN. CREST ELEVATION - 0.5' FB (8882.8')	= 13,589 AF
TAILING POND SURCHARGE CAPACITY	= 10,228 AF (10/31/20)
EAST BRANCH RES. SURCHARGE CAPACITY (MAXIMUM OF 676 AF)	= 676 AF
TOTAL SYSTEM SURCHARGE CAPACITY	= 10,904 AF
SURCHARGE FLOOD STORAGE REQUIRED	= 3,582 AF
EXCESS CAPACITY	**= 7,322 AF**

TSF LEVEL AT CREST - 0.5' - 3582 AF (10,007 AF) = 8,879.4'
TSF HIGH-HIGH WATER LEVEL = **8,877.4'**
(MIN. OF BEACH AT 860' AND LEVEL AT 3582 AF STORAGE)
TSF HIGH WATER LEVEL (1460' LINE ELEV) = **8,875.0'**

GRI SURFACE AREAS (OCT 2020):

BEACH AREA (CALCULATED) (BEACH AREA = TOTAL TSF - DAMS - POOL)	= 815 ACRES
WATER POOL AREA	= 317 ACRES
3 DAM DOWNSTREAM FACE	= 33 ACRES
1 DAM DOWNSTREAM FACE	= 159 ACRES
TOTAL TSF AREA (BEACH, DAMS, POOL)	= 1,324 ACRES

SURVEY NOTES:

1 DAM BEACH SA TO LO7:	10/1/20 (DRONE)
1 DAM BEACH LO7 TO LO9:	11/12/20 (HAND GPS)
3 DAM BEACH :	11/1/20 (DRONE)
POOL BATHYMETRIC:	10/20/20

A FINAL GPS HAND SURVEY OF THE 3 DAM CREST AND 1 DAM CREST FROM LO7 TO LO9 DONE ON 12/15/20.

R:\1300\1333\1333.00\PROJECTS\PONDSRVY\Pond20Fall\2020 Fall Pond and Beach 2-03-21 01:13pm SteveM XREFS: Climax_4C; Wheeler Logo;

REVISIONS

NO.	DATE	MADE BY	CKD. BY	REMARKS
△				
△				
△				
△				
△				
△				
△				

REFERENCE DWGS

DRAWING NO.	REFERENCE

Climax Molybdenum
A Freeport-McMoRan Company

W. W. WHEELER & ASSOCIATES, INC
Water Resources Engineers
3700 S. Inca Street
Englewood, CO 80110-3405
303-761-4130
Fax 303-761-2802

HENDERSON MILL TAILINGS STORAGE FACILITY	Climax Molybdenum Henderson Mill Parshall, CO		
BEACH AND POND SURVEY	SAA	12/20	SCALE AS NOTED
FALL 2020 SURVEY	CHECKED BY SMM	12/20	DRAWING NO. FIGURE 1 △
DATES: SEE SURVEY NOTES	ACCEPTED BY ...		

Figure 2 - Henderson TSF
Elevation Area Capacity

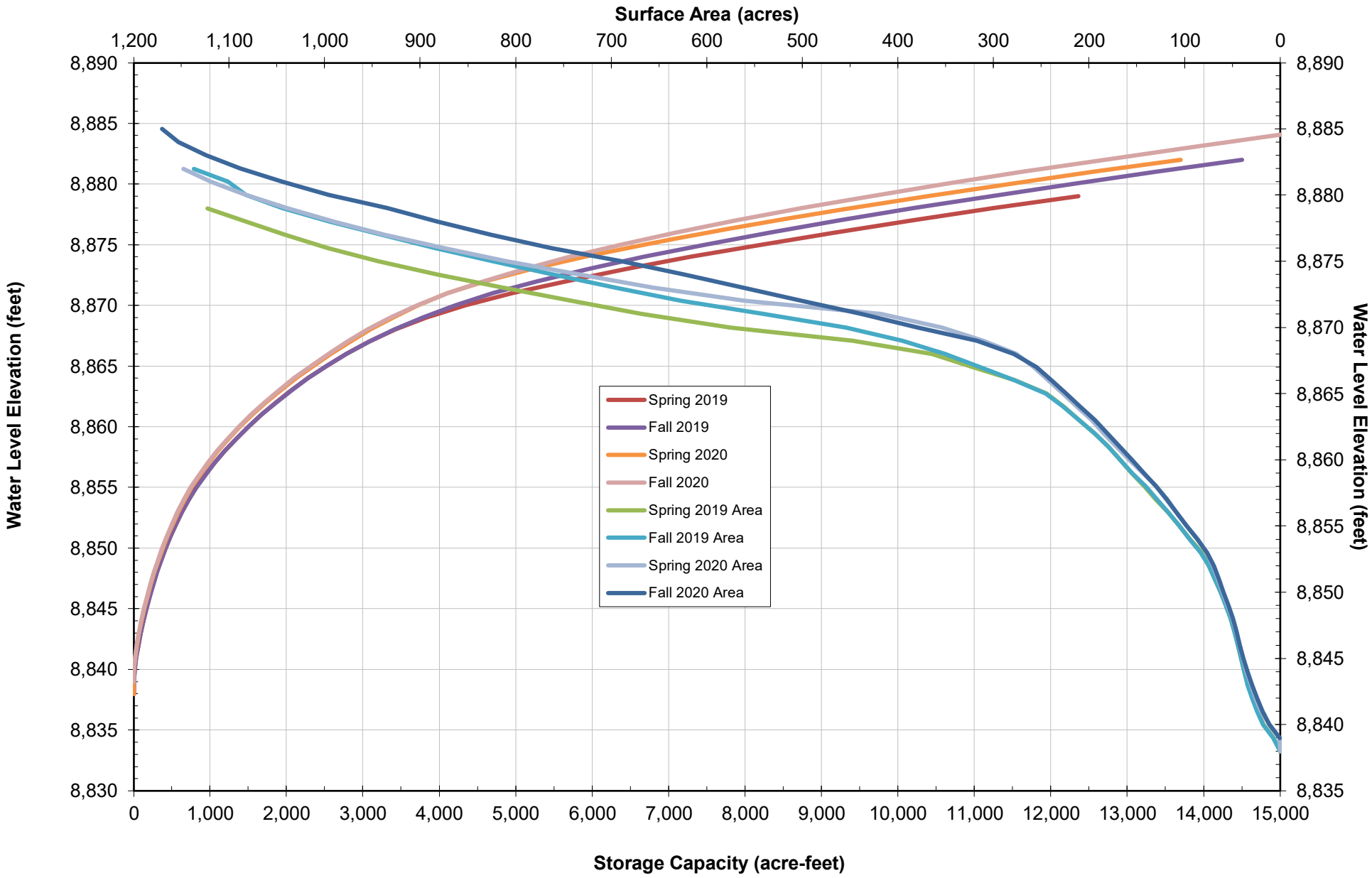
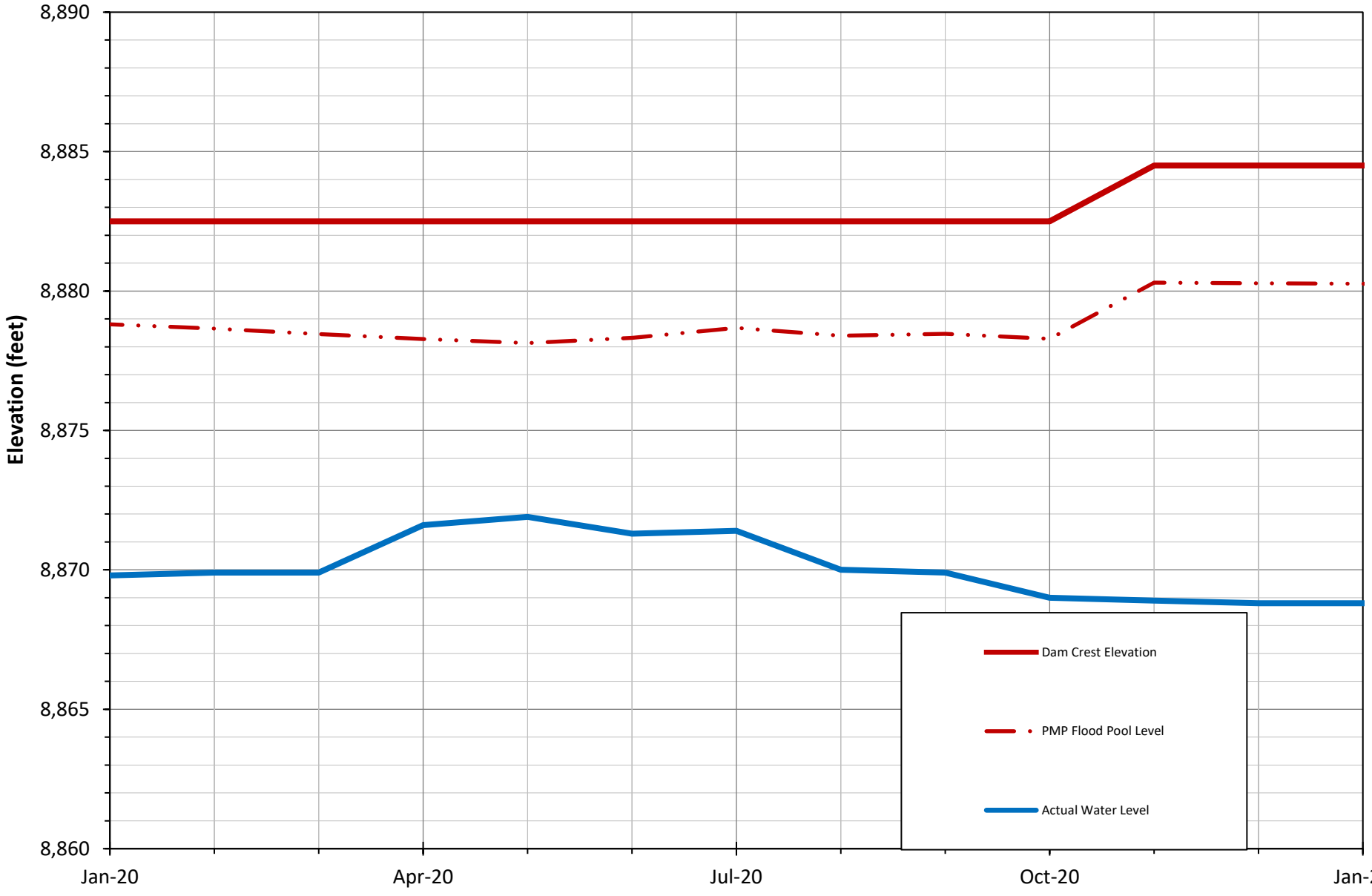


Figure 3 Henderson TSF
Water Pool Level Tracking



Attachment C

3-Dam Seep Water Return Line Leak-down Test Results

FREEPORT-MCMORAN

ORDER 400011132945 COMPLETED Henderson

Sort Field:	111501DA03	**Equipment:**	100000008159	**Equipment Description:**	TAILINGS DAM #3
Cost Center:	2402001111	**Functional Location:**	HE-2-MI-C8-TC-1866	**Functional Location Description:**	TAILINGS DAMS
Main Work Center:	4600P	**Serial No.:**		**PM Activity Type:**	PCM
Order Type:	MN03				
Start Date:	06/01/2020	**End Date:**	06/03/2020	**Priority:**	3
Originator:	IP1020200518				
Description:	PM LEAK DOWN TEST - #3 DAM SEEP H2O 364D				
Person Responsible:		**Person Responsible Description:**			

Failure Information	Check	Comments
Maintenance Rework		
Incident or Accident		
Exceeding Design Parameters		
Poor Operational Practice		
Normal Wear and tear		

FOLLOW ALL SAFETY INSTRUCTIONS RELATED TO EACH OPERATION

Operation Description

Operation	Sub-Op	Work Center	Operation Description	Act. No. People	Act. Hrs.	Act. Dur.	Comp Date
10		4600P	PM LEAK DOWN TEST - #3 DAM SEEP H2O 364				

Long Text

PM LEAK DOWN TEST - #3 DAM SEEP H2O 364
SUPERCEDES: 12/18/2015
SUPERVISER APPROVAL: Scott Marquardt
LAST REVEIW DATE: 10/18/2016
MAINT PLAN: 7000000912
==========

PROVIDE COPIES TO THE CHEIF ENVIRONMENTAL ENGINEER AND THE TnT SUPERVISOR UPON COMPLETEION.

==========

1. ✓ Shut the intake valves and make sure that they do not leak by - checking discharge valves for water flow.
2. ✓ Shut off lower ball valves ~~east~~ West side of road I70 gate. ?
3. ✓ Close discharge valves for drain line and overflow line.
4. ✓ Shut power off to pumps in lift station.
5. ____ Close both valves at dosing vault. ?

6. ✓ Fill drain line and overflow line and check discharge valves for leaks.

7. ✓ Lock all valves and read pressure gauge at the discharge valves.

Drain Line Pressure 64 psi Date/Time 6/30 2:00pm

Overflow Line Pressure 73 psi Date/Time 6/30 2:00pm

8. Wait over 24 hours and read Pressure gauges:

Drain Line Pressure 64psi Date/Time 7/1 2:00pm

Overflow Line Pressure 72 psi Date/Time 7/1 2:00ps

9. ✓ If there isn't a drop in pressure in the 24 hour period you can remove the locks. Open the intake valves first, then the discharge valves and return the system back to the pond operators.

10. ✓ If there is a drop in pressure note the pressure drop and repair the system, possible leaking pipes or valves.

11. ✓ All machine guards are in good condition, have no open holes and are properly installed.

12. ✓ Pickup area after PM is done. Ensure housekeeping is in good order.

13. ___ Write WO for any problems found

Completion Comments		
Stand pipe on overflow had a small leak. Tightened Change 1 PSI steady		
Completed by : Print Name	Signature	Date Completed
Jim Typhaer Ryan Jones		7/1/2020
Supervisor Reviewer : Print Name	Signature	Date Completed
Robert Smith		7/1/2020

MATERIALS

Operation	Component	Description:	Qty	UOM	IC	SS	Location

RETURN MATERIALS

Quantity	Stock or Part	Description:	Name

FOLLOW ALL SAFETY INSTRUCTIONS RELATED TO EACH OPERATION

Attachment D

Henderson Mill Tailing Storage Facility Annual Report

AECOM
7595 Technology Way
Suite 200
Denver, CO 80237
www.aecom.com

303-694 2770 tel
303 694 3946 fax

March 6, 2021

Mr. Ron Hickman
Climax Molybdenum Company- Henderson Mill
19302 County Road 3
Parshall, CO 80458

Subject: Annual (Year 2020) Tailings Storage Facility Evaluation, Henderson Tailings Storage Facility, Henderson Mill, Colorado

Dear Ron:

AECOM, through its legacy company URS Corporation, serves as the Engineer of Record (EOR) for the Climax Molybdenum Company's Henderson Tailings Storage Facility (TSF) comprised of two dams identified as1 Dam and 3 Dam, located at Henderson Mill in Grand County. AECOM has prepared this summary of our Annual (2020) TSF Evaluation as requested. Presented below is a summary of key observations made during 2020.

Leadoff or cutout deposition occurred at the Henderson TSF from January to May and in November through December. Spigot deposition at Henderson TSF generally occurred from May 12 to November 25, 2020.

AECOM completed full monthly site inspections of the TSF from May to October 2020. The reviews included meeting with operations personnel and reviewing production and operational logistics, operational plans, tailings management challenges, and future plans for operating the dams. Our site visits included reviewing tailings dam instrumentation, specifically reviewing piezometric elevations and inclinometer data, as available. We also completed a monthly walking tour of the dam observing the active and inactive tailings beach, dam crest, abutments, downstream slope, and toe area. We also conducted a review of the horizontal and foundation drain outfalls, as accessible and applicable.

In 2020, a major project completed by Henderson mill personnel was construction of the 3 Dam Buttress – Phase II. The project involved constructing the next phase of a southern toe buttress on the original 3 Dam plus a multi-tiered buttress on the north and south side of the Stepback 3 Dam. The Phase II construction was completed in the 2020 season. AECOM provided full-time construction oversight of the buttress placement and instrumentation installation activities. The construction record drawings will be provided to Henderson under separate cover.

No significant issues were identified in 2020 during the EOR site visits. Any maintenance issues during the EOR site visits were discussed with the Henderson tailings operations staff and corrective action plans were developed and implemented.

The Henderson TSFs appear to be functioning as designed and within the established design criteria. This judgment is based on observations made during site visits, as well as information provided and reported by Henderson tailings operations staff such as deposition quantity, water surface elevations, and other parameters.

The remote monitoring system provides continuous monitoring of piezometric elevations. The system incorporates alarms based on piezometric elevation changes identified as either rate of change or threshold exceedances. Rate of change alarms are triggered when predetermined elevation changes occur over a prescribed period of time. Action levels and threshold elevations are specific to individual piezometers. Threshold levels are established based on the results of slope stability analyses and provide redundant warnings should piezometric elevations rise above prescribed predetermined elevations. The monitoring system triggers alarms requiring immediate review.

AECOM reviews the piezometric data monthly on both 1 Dam and 3 Dam. Piezometers levels are tracking in accordance with the design. AECOM reviewed the annual inclinometer data and found movement within the tolerance expected as part of tailings dam construction.

Continued diligence in monitoring embankment construction, decant pond level, and instrumentation is essential to long term safety and performance of the structure. Correct operation of the tailings storage facility is essential, and it is incumbent upon Henderson to maintain proper training and personnel. AECOM will continue to work with the Henderson team to monitor the performance of the TSF.

AECOM represents that our services are performed within the limits prescribed by the Client in a manner consistent with the level and skill ordinarily exercised by other consultants under similar circumstances. No representation to the Client, expressed or implied, and no other warranty or guarantee is included or intended.

Please do not hesitate to call us with any questions or comments.

Sincerely,

Lisa R. Yenne, PE
Project Manager

Richard R. Davidson, PE
Senior Principal Engineer