STORM WATER MANAGEMENT PLAN



Prepared For:

Freeport-McMoRan Inc. Climax Molybdenum Company Henderson Mill

April 2020

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Appendices

Appendix A

Figure 1 - Mill Storm Water Management Map, Mill and Tailing Area

Figure 2 – Mill Storm Water Management Map, Upper Conveyor/Access Road Area

Figure 3 – Mill Storm Water Management Map, Lower Conveyor/Access Road Area

Appendix B

Semi-Annual SWMP Compliance Inspection Forms

Appendix C Temporary Activities

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

J/Stuart Teushcer, General Manager

DISTRIBUTION LIST

Controlled copies of this Stormwater Management Plan (SWMP) have been distributed as indicated below.

Copy #	Copy Holder	Location	
1	Environmental Manger, Mine	Henderson Mine – Empire, CO	
2	Chief Environmental Engineer, Mill	Henderson Mill – Parshall, CO	

SWMP RETENTION AND AVAILABILITY

This SWMP will be retained on site at the Henderson Mill. Copies of this SWMP shall be made available upon request to the Environmental Protection Agency (EPA), Colorado Department of Public Health and Environment (CDPHE), Colorado Division of Reclamation, Mining, And Safety (CDRMS), and any local agency approving sediment and erosion plans or storm water management plans. If the SWMP is required to be submitted to any of these entities, it must include a signed certification in accordance with Part I.E.5 of the COR-040000, certifying that the SWMP is complete and meets all permit requirements.

REVISION HISTORY

When this SWMP is amended or updated, the date of the latest revision should be indicated below along with a description of the changes that were made in accordance with Henderson's Control of Document Procedure within the Henderson Operation's Environmental Management System (EMS). Copies of this SWMP shall be made available upon request to the Environmental Protection Agency (EPA) Director, EPA Regional Administrator, Colorado Department of Public Health and Environment (CDPHE), or their authorized representatives.

Rev # Rev Re Date		Revised By:	Description of Revisions
1	4/2020	Amber Parmet, Senior Environmental Engineer	 Created Initial Version of Mill specific SWMP (i.e., separated Mine, Mill and URAD SWMPs). Updated SWMP text to reflect current site conditions, personnel, and changes. Updated SWMP Maps to reflect current site conditions.

OWNER INFORMATION

HENDERSON MILL, PARSHALL, COLORADO				
Emergency Contact: Aaron Hilshorst (Administrator) Work Phone: (720) 942-3420				
Title: Chief Environmental Engineer	Emergency Phone: (720) 942-3532			
Secondary Contact: Amber Parmet	Work Phone: (720) 942-3480			
Title: Sr. Environmental Engineer	Emergency Phone: (720) 942-3532			
Type of Manufacturer: Active Mill Site				
Operating Schedule: 24 hours per day				
Number of Employees: The Mill has about 100 employees, including part-time staff. Shifts overlap all day.				
Average Process Water Discharge: 0 gallo	ons per minute			
NPDES Permit: CDPS CO-0000230				
Storm Water General Permit: CDPS COR-040000				
Facility Number: COR-040079				

1.0 INTRODUCTION AND OBJECTIVES

This Storm Water Management Plan (SWMP or Plan) has been prepared for the purpose of identifying potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges associated with operation of the Henderson Mill Site and the associated conveyor system. The Plan describes and provides guidelines for the implementation of both general best management practices (BMPs) and site- or activity-specific BMPs. These BMPs are designed to minimize the likelihood of pollutants being carried off-site through storm water discharges.

The storm water boundaries, BMPs, and outfall locations discussed in this SWMP are based on surface discharges resulting from storm water events. The fate and control of groundwater associated with the facility's process water is managed under a different authority and is beyond the scope of this SWMP.¹

This SWMP has been formulated and will be implemented with the following objectives and goals:

- To provide a simple format for inspection, control, prevention, and mitigation of potential pollution sources that may affect the quality of storm water discharge;
- To provide a simple format for educating and training site personnel in methods and practices for storm water management and pollution prevention; and
- To provide assurance that the provisions of CDPS General Permit for Storm Water Discharges Associated with Metal Mining Operations and ancillary activities, CDPS Permit No. COR-040000, are met.

¹ Groundwater at hard rock mine and associated milling sites in Colorado is regulated by the Division of Reclamation and Mine Safety (DRMS) under authority of Senate Bill 89-181, C.R.S. § 25-8-202(7), and the Dec. 14, 2010 Memorandum of Agreement between DRMS and CDPHE addressing the "implementation of SB 181 Amendments to the Colorado Water Quality Control Act (25-8-101, et seq) pertaining to the regulation of mineral mines." Consistent with that authority, the Henderson Mill is authorized by a permit issued by DRMS, which includes a Water Quality Management Plan governing groundwater compliance and an Environmental Protection Plan.

2.0 FACILITY DESCRIPTION

2.1 Facilities

The Henderson Mine and Mill operate under the same CDPS General Permit No. CO04000 and have the same Facility Number (COR040079). Climax Molybdenum has developed site specific SWMP's for the Henderson Mill, Henderson Mine and URAD Water Treatment Plant (Facility Number COR040080). Facilities covered by this SWMP are specific to the Henderson Mill and include a mill site and an ore conveyance system. Ore is mined in Clear Creek County at the Henderson Mine and conveyed to the Williams Fork River basin via a ten-mile-long tunnel and over a five-mile-long surface conveyor system to the mill site, which is located in Grand County. The mill sites was constructed in the early 1970's. The current ore conveyance system, which replaced the historic train haulage system, was constructed in the late 1990's. The mill site and ore conveyance system serves the primary purpose of hauling and concentrating molybdenum disulfide ore (MoS₂), as discussed in further detail below.

2.1.1 Mill

The Mill is located in Grand County, Colorado in the upper Williams Fork River valley approximately 22 miles south of Parshall, Colorado. The mill site and all facilities are on the western side of the Continental Divide in the upper Colorado River drainage basin. To access the Mill, exit I-70 at Silverthorne, Colorado, and proceed north on Highway 9 for approximately 12.5 miles to Ute Pass Road. Once on Ute Pass Road drive approximately eight (8) miles east until reaching the mill complex. The Mill's access road is located just past East Branch reservoir which will be visible on the right. The main security gate is located at the top of the access road.

Mill facilities include the mill complex, tailing storage facility, a gravel pit, and several remote storage yards. The majority of managed storm water associated with the Mill is routed to the mill process water system. The total area associated with the Mill is approximately 9,349 acres, of which approximately 7,275 acres are undisturbed, and 2,074 acres are disturbed. Process water associated with the mill site is not discharged off-site unless a major system upset or storm event occurs. Potential process water discharges including storm water contained within the mill process water system are managed under CDPS Permit Number CO-0000230. Areas with storm water runoff that do not report to the process water system, including a gravel pit and remote storage yards, are addressed in this plan.

2.1.2 Ore Conveyance System

The overland portion of the conveyor extends for approximately five miles from the Henderson Mine portal to the Henderson Mill. The conveyor system consists of a drive building at PC-2/PC-3 Transfer, a snow shed, trestles crossing wetlands at Con3 and Con9, an elevated trestle at the Mill, and over 20,000 feet of elevated conveyor housing and appurtenances. The route of the conveyor follows Henderson's former train haulage alignment—passing 1.1 miles overland across U.S. Forest Service lands followed by the final segment on private land owned by Climax Molybdenum Company. The surface right-of-way, an associated building (PC-2), and a reclaimed yard area near the tunnel portal are also addressed in this plan.

2.2 Areas Subject to Effluent Limitations Guidelines

None of the potential storm water discharge areas addressed under this SWMP are subject to effluent limitations guidelines.

However, as identified in the previous section, the majority of storm water from disturbed areas associated with the Henderson Operations is contained within the mill process water system, which is currently managed as a "no discharge" system under CDPS Individual Permit Number CO-0000230. *See* Summary of Rationale (Sections IV.A.2 (¶1), V.A.2, V.B.1) for CDPS Individual Permit Number CO-000230. In the unlikely event of a discharge from the mill process water system, the combined discharge of storm water contained within the process water system and the mill process water would be subject to effluent limitations for the Ore Mining and Dressing Point Source Category, Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory, which are found in the Code of Federal Regulations 40 CFR 440 Subpart J as noted in the Summary of Rationale (Section VI.A.2.a) for CDPS Individual Permit Number CO-000230.

2.3 Site Plan

Facility diagrams and map detailing the location of the facilities are provided in Appendix A and include the following.

Figure	Title	Purpose
1	Mill Storm Water Management Map	Illustrates the boundaries of storm water permit areas associated with the Mill as well as general drainage patterns and flow directions, locations of outfalls, potential storm water pollutant sources, material storage areas along portions of the ore conveyance system that are not covered in other maps, areas of soil disturbance, location of surface water bodies in or next to the facility, identification of existing structural control measures and location of impervious structures.
2	Mill Storm Water Management Map, Upper Conveyor/Access Road Area	Provides details of the area surrounding the upper conveyor and access road area.
3 Mill Storm Water Management Map, Lower Conveyor/Access Road Area Provides details of the access road area.		Provides details of the area surrounding the lower conveyor and access road area.

3.0 SWMP ADMINISTRATORS

Personnel in the company responsible for implementation, maintenance and revision of this SWMP include:

Name	Title	Phone	Primary Storm Water Responsibilities
Miguel Hamarat	Environmental Manager	(720) 942 - 3255	 Oversees overall implementation of the SWMP; Reviews proposed facility changes for potential storm water impacts; Coordinates SWMP revisions; Works with Henderson management to ensure availability of resources for implementation of this SWMP; Reports issues related to implementation of BMPs to management personnel; Assists Semi-Annual SWMP Site Compliance Evaluations for the Mine, as needed; Assists Semi-Annual SWMP Site Compliance Evaluations for the URAD Water Treatment Plant, as needed; Reviews and assists the Annual Report for the Mine/Mill and URAD facilities; and Provides guidance to Mine Operations personnel regarding implementation of BMPs.
Aaron Hilshorst	Chief Environmental Engineer	(720) 942 - 3420	 Provides guidance to Mill Operations personnel regarding implementation of BMPs. Performs Semi-Annual SWMP Site Compliance Evaluations for the Mine; Performs Semi-Annual SWMP Site Compliance Evaluations for the Mill and Ore Conveyance System; Performs Semi-Annual SWMP Site Compliance Evaluations for the URAD Water Treatment Plant; Provides guidance to Mine Operations personnel regarding implementation of BMPs; Provides guidance to Mill Operations personnel regarding implementation of BMPs; and Completes/Submits the Annual Report for the Mine/Mill and URAD facilities.

4.0 IDENTIFICATION OF POTENTIAL POLLUTANT SOURCES

Table 4.1 summarizes the purpose and location of potential storm water pollutant sources associated with the Mill and ore conveyance system located in disturbed areas (see Figures in Appendix A for delineation of disturbed and undisturbed areas), areas used for material storage or handling that are exposed to precipitation and other areas with potential sources of pollution. The following information is included within this table.

- The location and purpose of each potential storm water pollutant source;
- The outfall through which potentially impacted storm water may be discharged;
- The likelihood that the potential storm water pollutant source may impact storm water that is discharged off-site; and
- The basis for the likelihood determination.

The pollutant source numbers (PS#) and outfall numbers (OF-#) in Tables 4.1 may be used to locate the sources on the figures in Appendix A for the Ore Conveyance System and Mill.

Specific preventative maintenance, good housekeeping, and spill prevention and response procedures for each potential pollutant source are identified in Section 5.0 along with other best management practices (BMPs). As new potential pollution sources are identified, Table 4.1 shall be updated (as well as Table 5.1, Storm Water Management Maps and Inspection Forms, as applicable).

The below key clarifies naming conventions used for pollutant sources and outfalls.

PS-	Followed by	M-#	Pollutant sources at the Mill.
PS-	Followed by	O- #	Pollutant sources along the overland conveyer.
OF-	Followed by	M #	Outfalls at the Mill and along the overland conveyor.

Stormwater outfalls are identified in the field with 6" x 9" reflective white metal signs with green lettering. An example of an outfall sign is provided below (not to scale).



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PS #	Potential Pollutant	Location	Purpose	Outfall	Likelihood of Contact with Storm Water	Basis
PS-M-7	Sediment and erosion.	Gravel Pit (currently out of commission)	Source of gravel for Mill maintenance and construction.	Flows back into the gravel pit	Unlikely	Majority of water in the ditch is returned to the lower portion of the gravel quarry. Remaining water in the ditch discharges into an open field. The potential for erosion of significant sediment from the gravel pit is small because area is covered with washed aggregates resulting from gravel pit operations. The lower areas of the gravel pit report to existing ponds resulting from gravel mining. These serve as excellent sediment traps since there is no surface connection to the Williams Fork River, and topographic separation is more than adequate for high magnitude storm events.
PS-M-9	Sediment and erosion.	Topsoil Stockpile Area	Stockpiled topsoil to be used for reclamation or fill material.	OF-M26, OF-M29, OF-M32 (Williams Fork)	Probable/ Unlikely at OF-M29	Erosion and sedimentation from access roads and stockpiles during storm event. The outfalls are in close proximity to topsoil stockpiles and associated haul roads. Outfall OF-M29 drains to Ranger Gulch which is typically dry. There is little potential for sediment to be carried down gradient from the outfall.
PS-O-1	Sediment and erosion.	Conveyor & Access Road	Conveyor used to transport ore from the Mine to the Mill.	OF-M5, OF-M6, OF-M7, OF-M8, OF-M11, OF-M12 (Williams Fork)	Probable	Erosion and sedimentation during storm event. There are several drainage culverts under the conveyor that discharge toward the valley below, two of which are associated with discernible flow channels or discharge points to the Williams Fork.
PS-O-2	Sediment and erosion.	Rectifier #6 Salvage Yard	Old storage yard (no longer storing equipment)	OF-M14, OF-M30 (Williams Fork)	Probable	Runoff from major storm event could discharge east towards river, but storage in the yard is monitored and unacceptable materials are removed.
PS-O-3	Sediment and erosion.	PC2/PC3 Transfer Station	Transfer of ore from PC2 to PC3.	OF-M8 (Williams Fork)	Probable	Erosion and sedimentation of access roads which could be entrained in storm water being discharged from the site.
PS-O-4	Sediment and erosion.	Portal Lay-down and Rectifier #5 Yards	Portal Lay-down Yard where PC2 daylights. Long-term parts storage.	OF-M10, OF-M15 (Williams Fork)	Unlikely	Yard is rarely used and relatively flat.
PS-O-5	Sediment and erosion.	Upper Access Road	Access to Conveyor	OF-M4, OF-M17, OF-M18, OF-M19, OF-M20, OF-M21, OF-M23, OF-M24, OF-M31 (Williams Fork)	Probable	Access road is steep and prone to erosion.

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5.0 BEST MANAGEMENT PRACTICES

This section contains general structural and non-structural BMPs for reducing the potential of the sources identified above to contribute pollutants to storm water discharges. Site- or activity-specific BMPs appropriate for each potential storm water pollutant source are summarized in Table 5.1 at the end of this section.

As new potential pollution sources and/or BMPs are identified, Table 5.1 (as well as Table 4.1, Inspection Forms in Appendix B, and the Storm Water Management Maps, as applicable) will be updated.

Henderson's stormwater permit requires SWMPs to include BMPs that are selected, installed, implemented and maintained in accordance with good engineering practices, that reduce pollutants in storm water discharges, and that assure compliance with the terms and conditions of COR-040000. To that end, Henderson references the EPA's National Menu of Stormwater Best Management https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-Practices at stormwater#edu and the associated BMP guidance document titled National Management Measures Nonpoint Source Pollution from Urban to Control Areas (http://www.epa.gov/owow/nps/urbannmm/index.html) to provide guidance on BMP selection, implementation, limitations and maintenance requirements.

5.1 Storm Water Diversion

A key strategy utilized by Henderson to prevent potential storm water pollution is to minimize the amount of storm water that can come into contact with disturbed land and other industrial activities. The diversion systems described below are also shown on the Figures in Appendix A as "interceptor canal".

- A storm water interceptor canal has been constructed around the west and north ends of the tailing storage facility and delivers un-impacted storm water around the north end of the property to the Williams Fork River; and
- A collection system has been constructed to divert storm water from drainages southwest of the Mill property through the East Branch diversion pipe to the Williams Fork River.

5.2 Erosion and Sedimentation

If projects have a potential for polluting storm water or causing sedimentation or erosion, funds shall be allocated in the project's budget for implementing one or more of the BMPs outlined below. Additionally, compliance with this SWMP is a requirement of all construction contracts.

5.2.1 Prevention of Erosion

As compared to the sediment removal practices that are discussed below, these BMP's are intended to prevent erosion which could eventually impact water quality.

Erosion and sedimentation shall be controlled through implementation of one or more of the following BMPs.

- Reseed disturbed soil areas with maintenance seed (if it is temporary) or Climax Seed Mix (for permanent or final construction).
- Install mulch, excelsior blankets or reseed areas on disturbed slopes greater than 3:1 and consideration should be given to installation on slopes between 5:1 and 3:1 on a case by case basis depending on the length, exposure, and texture of the soils on the slope.
- Avoid slopes steeper than 2:1 and when unavoidable, rock protection (riprap) or excelsior mats with netting shall be installed.
- Install riprap and at least 6-inches of suitable bedding in all water flow channels where the design flow will exceed ~2 feet per second. Generally, suitable bedding ranges from a minimum diameter of sand to a maximum diameter of 2-3 inches of coarse, granular soils.
- Furrow contour side hill slopes whenever suitable equipment is available. Otherwise, final grading shall be performed in a manner that will result in tracks and depressions contoured across the slope instead of a down "fall-line." This will not only minimize wind erosion but will also "roughen" the earth to provide a microclimate of wind protection for new plants and will help conserve precipitation for use in growth of new seed.
- Minimize the time that bare soil is exposed.
- Install check dams and water bars wherever the slope exceeds approximately two percent (~2%) to reduce water velocities and erosion potential in constructed swales and channels. Riprap linings shall be installed in steeper slopes or where the velocity exceeds two (2) feet per second.
- Minimize the disturbance of existing vegetation.
- Reseed and apply mulch as soon as possible to disturbed areas where erosion is probable. Mulch may be natural, consisting of slash, brush, manure and vegetation previously chipped and stockpiled; and/or clean straw, free from noxious weed seed, mold, and other harmful elements; or wood cellulose fiber.
- Apply erosion control mats to all cut slopes steeper than 3:1. Staples shall be installed at a maximum spacing of 4 feet. Mats shall overlap on the ends and sides at least 6 inches. Regular duty excelsior mats shall be used for slopes less than 2:1. Heavy duty excelsior or jute mats shall be used for slopes greater than 2:1.
- Where erosion scarps have developed (particularly along the faces of flood detention structures), loose granular material shall be removed, and the scarp filled with suitable soils to the original profile of the bank or slightly above the original profile. If the scarp is not completely filled, the steeper area at the brow of the scarp will encourage erosion and may cause redevelopment of the scarp. The area upstream from the scarp shall be carefully inspected to determine if there was an irregularity in the ground profile that caused storm water to concentrate and erode the soils. Any such irregularity shall be removed by the most appropriate BMP listed herein.
- Cover soils known to have a relatively high erosion potential with coarser textured erosion resistant soils and mulch/reseed the topsoil.
- Where feasible, bypass live stream flows around construction sites during earthwork activities by installation of temporary (or permanent) pipes or rock lined ditches.

5.2.2 Sediment Removal

When the above prevention methods do not adequately control sedimentation and erosion, the following structural removal methods shall be used:

- Construct sediment traps below excavations involving small water flow rates that cannot be bypassed around the excavation.
- Construct storm water detention ponds and sediment basins for collecting runoff and slowing the velocity enough to settle the sediment.
- Construct silt fences, straw bale barriers, or gravel/sand filters at the toe of slopes where erosion prevention is not practical or sufficient to deter all erosion; or where the terrain is too steep for construction of sediment traps.
- Construct rock check dams to prevent sediment from traveling through channels, drains, and outfalls.
- Install wattles at, or prior to check dams, around drains, in stormwater channels, and where deemed necessary to control/stop sediment carried by stormwater. This type of BMP must be maintained and repaired/replaced as necessary to be effective in controlling sediment.

5.2.3 Preventive Maintenance Practices

Preventive maintenance tasks associated with the Henderson Operations are managed through a computer-based software program called SAP. Required maintenance has been identified and established for storm water management devices, such as storm water interceptor ditches, and for on-site equipment and processes used to prevent conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters. When new equipment is brought on site additional maintenance tasks shall be identified as required. Any deficiencies in preventive maintenance shall be identified during routine inspections performed by area workers and through regular audits performed by members of the Environmental Department. When issues are identified, they shall be brought to the attention of area supervisors and immediately addressed. Additional tasks shall be added to the SAP preventive maintenance system, as needed.

5.2.4 Good Housekeeping and Materials Handling

Good housekeeping and materials handling practices are designed to maintain a clean and orderly work environment, reducing the possibility of storm water contamination. In addition to routine maintenance and inspections completed by the Environmental Department, any additional housekeeping is managed through daily work area inspections conducted by all staff at the Mill. Any identified issues are addressed immediately and entered in to the SAP work order maintenance system as necessary. All Henderson staff receive training on proper materials handling and spill response on an annual basis.

5.3 Spill Prevention and Response Procedures

5.3.1 Spill Prevention and Preparedness

Potential spills in the Mill building vicinity and tailings facility are either contained within buildings, contained within secondary containments, or contained within the process water system. The potential for spills along the ore conveyance system are minimal due to the lack of chemical storage. Any spills that are not captured within the Mill process water system would generally be associated with maintenance activities outside of the capture zone. In addition, site spill prevention practices are designed to reduce the possibility of storm water contamination and include:

- Contractors are required to comply with the BMPs outlined in this SWMP and/or submit a detailed spill prevention plan;
- Wherever significant quantities of toxic materials or other pollutants are to be used on site by Contractors, the contractor is required to notify the environmental department and prepare a specific procedure for material containment and spill prevention. Spill prevention and response measures for chemicals used by the Henderson Operations are addressed by the Materials Containment Plan and Incident Response Manual developed in compliance with the site's individual CDPS permit;
- Fuel oil spill prevention procedures for temporary fuel tanks comply with the facility's SPCC Plan, including placement within adequately sized and impermeable containment structures. If discharging of water collected within containment structures is necessary, it shall first be inspected for signs of contamination. If contamination is present the water shall be diverted to the facility's process water system or hauled off-site;
- Fueling operations and vehicle maintenance shall be performed at designated facilities;
- When possible, chemicals shall be stored inside buildings or in covered storage sheds; When this is not possible, containers shall be placed in appropriate containment structures to capture a release prior to it contaminating storm water;
- Drip pans and buckets shall be used during maintenance activities and at locations where leakage is probable;
- Spill cleanup kits shall be marked and readily available near locations where spills are probable; and
- Releases shall be immediately cleaned up after their discovery.

5.3.2 Spill Response Procedures

Spill response procedures are addressed within several Henderson environmental management system documents including this SWMP, the Spill Prevention Control and Countermeasures / Materials Containment Plan, Drinking Water Monitoring Plan, Environmental Management System (EMS) Manual and Incident Response Manual (IRM). In each instance, procedures shall provide reference to the IRM which serves as the primary environmental emergency response document and provides specific procedural guidance related to spill response measures.

5.4 Employee Training

Employees and contractors who are involved with mining activities that may impact storm water runoff receive training on the components and goals of this SWMP including, as applicable, the following:

- Overview of the goals of this SWMP.
- Types and location of potential pollutant sources associated with the areas where they work.
- General and activity/site-specific BMP measures, including the following:
 - Sediment and Erosion Control Measures;
 - Spill Prevention and Response Procedures;
 - Good Housekeeping and Materials Handling; and
 - Preventive Maintenance.
- Site drainage with an emphasis on:
 - Process water boundaries;
 - Location of storm water outfalls and sheet flow discharges; and
 - Location of specific potential pollution sites and affected outfall.
- Inspection and implementation requirements.
- Possible enforcement actions resulting from non-compliance.

Training Forum	Description
New Hire Orientation (within 30-days of hiring)	This training includes SWMP introduction, spill prevention/response, good housekeeping, and hazardous materials management.
Contractor Awareness Training (prior to beginning work on-site)	The contractor environmental pamphlet and awareness training video training provides SWMP introduction, spill prevention/response, good housekeeping, and hazardous materials management.
On the Job (continual) This training includes area and job specific storm was measures and drainages.	
Environmental Refresher Training - Employees and Contractors (annual)	This training reinforces SWMP components and goals, mine operations and control features utilized to prevent storm water contamination from occurring.

Henderson utilizes multiple training forums to provide adequate training, including:

Additional training shall be provided to affected employees when a new hazard is introduced that could potentially affect storm water management. Records of this training shall be maintained by the Environmental Department or the Human Resources Department per the Environmental Records procedures within Henderson's Environmental Management System.

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PS/OF #	Location	Good Housekeeping Materials Handling and Spill Prevention	Preventative Maintenance/Measures, Storm Water Diversions Measures	Sediment/Erosion Control and Management of Runoff
PS-M-7	Gravel Pit	Trash/debris in the area is picked up as needed.	Culvert along county road is maintained as needed.	Culvert along county road causes water to slow and sediment to fall out. Storm water in culvert generally flows back into the gravel quarry approximately 100 yards down the road.
PS-M-9	Topsoil Stockpile Area	Haul trucks are properly loaded to prevent material from spilling onto access roads. Vehicles are maintained routinely and as needed to prevent leaks/spills. Spills are cleaned up immediately.	Continued maintenance of access roads and stockpiled material. Storm water controls are repaired/maintained as needed.	Outfalls and culverts leading to the outfalls are armored with riprap. Riprap check dams, sedimentation ponds and wattles are used near the outfalls, as necessary.
PS-O-1	Conveyor & Access Road	Pick up trash/debris along roadway, as well as any ore that may have spilled from the conveyor (this is rare).	Continued maintenance of access road and conveyor system. Plant vegetation on slopes of constructed fill as needed. Storm water controls are repaired/maintained as needed.	Maintain crown or lateral slope to drainage ditch on hillside to provide rapid drainage across road to ditch and to prevent ponding. New disturbances should be re-vegetated using excelsior mat. Rock check dams and/or wattles are used at stormwater outfalls.
PS-O-2	Rectifier #6 Salvage Yard	Restrict storage area to non-friable materials. Post signs prohibiting storage of fuels/soils, liquids, and friable materials.	N/A	Placement of riprap, wattles and/or silt fence near outlet.
PS-O-3	PC2/PC3 Transfer Station	Maintain silt fencing/ wattles to prevent sediment in parking area from entering storm water drainage system.	Conveyor components and storm water controls are repaired and/or maintained as needed.	Placement of riprap at outlet and/or wattles near drainage grate.
PS-O-4	Portal Lay-down Yard	Restrict storage area to non-friable materials. Post signs prohibiting storage of fuels/soils, liquids, and friable materials.	N/A	Placement of wattles and/or silt fence near outlet, if sedimentation is observed near the outfall. Use rock check damns at Outfall OF-M15.
PS-O-5	Upper Access Road	N/A	Maintain ditches along access road.	Use of erosion prevention techniques such as wattles along roadway and at outlet. Maintain sedimentation ponds, rock check dams, Gabion baskets and wattles at outfalls.
OF-M4	Upper Access Road Southwest of Conveyor at Table 512	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the road adjacent to the conveyor to the controlled outfall.	Water is passed through an initial sedimentation pond, overflowed through riprap/rock check dams and then through a second polishing pond.
OF-M5	Conveyor Access Road (Culvert Under Road at South Access Road)	N/A	Storm water outfalls are inspected semi-annually and maintenance performed as needed; storm water in this area is diverted via earthen berms, natural topography and ditches that run adjacent to the upper access road from the conveyor at the top of the hill to the controlled outfall.	Placement of riprap, rock check dams, Gabion baskets, retention basin and a trash rack at the outfall slows storm water and removes sediment. BMPs including riprap, rock check dams and vegetation are prevalent along the upper access road from the conveyor all the down to the outfall.
OF-M6	Conveyor Access Road at Table 260	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed, storm water in this area is diverted via earthen berms and natural topography along the access road to the controlled outfall.	Placement of riprap, rock check dam, and/or wattles at the outfall slows storm water and removes sediment.

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PS/OF #	Location	Good Housekeeping Materials Handling and Spill Prevention	Preventative Maintenance/Measures, Storm Water Diversions Measures	Sediment/Erosion Control and Management of Runoff	
OF-M7	Control Measure (BMP) located on Conveyor Access Road at Table 198	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the access road to the controlled outfall.	Placement of riprap, rock check dam, and/or wattles at the side of the Conveyor Access Road at Table 198 to slow storm water and remove sediment before draining over the vegetated hillside to culvert at outfall in ditch on CR3.	
OF-M8	Below PC2/PC3 Transfer Station	N/A	Storm water outfalls are inspected semi-annually and maintenance performed as needed; Storm water is diverted from (1) the drainage ditch on the south side of PC2/PC3 transfer station building; (2) the drainage ditch southwest and adjacent to the first 100-yards of PC3; (3) drainage from the parking/industrial area north of the transfer station building and beginning of PC3; and (4) Drive House creek (this can be sent to outfall or through wetlands) via earthen berms, natural topography, diversion ditches and underground culvert to the underground energy dissipation box in the middle of the parking area. Water then travels via underground culvert below the old railroad grade and county road to the controlled outfall.	Water passes through a sedimentation pond and riprap prior to the outfall on the north side of the county road. BMPs up- gradient of the outfall include riprap, wattles, jersey barriers, trash rack, rock check dams, and vegetated areas in and along the diversions (mentioned in the previous column) that all serve to slow storm water and remove sediment.	
OF-MI1	Control Measure (BMP) located on Conveyor Access Road at Table 36	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the access road to the controlled outfall.	Placement of riprap, rock check dam, and/or wattles at the side of the Conveyor Access Road at Table 36 to slow storm water and remove sediment before draining over the vegetated hillside to culvert at outfall in ditch on CR3.	
OF-M12	Control Measure (BMP) located on Conveyor Access Road at Table 239	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the access road to the controlled outfall.	Placement of riprap, rock check dam, and/or wattles at the side of the Conveyor Access Road at Table 239 to slow storm water and remove sediment before draining over the vegetated hillside to outfall southwest of CR3 on the hillside.	
OF-M14	Northeast Corner of Rectifier #6 Salvage Yard	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted (off the hillside up-gradient from the yard) from entering the lay-down yard via earthen berms and natural topography to the controlled outfall.	Storm water is discharged through a vegetated discharge channel that includes riprap. Vegetated areas up-gradient of the outfall serve as additional BMPs to slow water and remove sediment.	
OF-M15	Southwest Corner of Portal Lay Down Yard	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water from the Southwest portion of the yard is diverted via natural topography to the controlled outfall. Much of the water from the lay-down yard discharges off-site via sheet flow.	Storm water is discharged through rock check dams and through riprap immediately above the outfall to slow water and remove sediment.	
OF-M17	Northeast of Conveyor at Table 498	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the conveyor grade to the diversion ditch and down to the controlled outfall.	Storm water is discharged through a heavily vegetated area immediately prior to the outfall. The length of the diversion ditch is well vegetated with some riprap providing additional BMP up-gradient of the outfall.	

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PS/OF #	Location	Good Housekeeping Materials Handling and Spill Prevention	Preventative Maintenance/Measures, Storm Water Diversions Measures	Sediment/Erosion Control and Management of Runoff	
OF-M18	Northeast of Conveyor at Table 512	N//A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the conveyor grade to the diversion ditch and down to the controlled outfall.	Storm water is discharged through a heavily vegetated area immediately prior to the outfall. The length of the diversion ditch is well vegetated with some riprap providing additional BMP up-gradient of the outfall.	
OF-M19	Upper access road. Northwest of OF-M14	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the road to the controlled outfall.	Placement of riprap, rock check dam, and/or wattles at the outfall slows storm water and removes sediment.	
OF-M20	Southeast of Conveyor at Table 409	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water from the Southwest portion of the yard is diverted via natural topography to the controlled outfall. Much of the water from the lay-down yard discharges off-site via sheet flow.	Placement of riprap, rock check dam, and/or wattles at the outfall slows storm water and removes sediment.	
OF-M21	Conveyor access road. North of GW-11 and southeast of East Branch Reservoir.	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the road to the controlled outfall.	Placement of riprap, rock check dam, and/or wattles at the outfall slows storm water and removes sediment.	
OF-M23	Conveyor Access Road (North of Short Tunnel Below Conveyor)	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the road to the controlled outfall.	Placement of riprap, rock check dam, sedimentation pond and/or wattles at the outfall slows storm water and removes sediment.	
OF-M24	Conveyor Access Road (South of Short Tunnel Below Conveyor)	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the road to the controlled outfall.	Placement of riprap, rock check dam, sedimentation pond and/or wattles at the outfall slows storm water and removes sediment.	
OF-M26	Topsoil Stockpile Area (West Side of Tails)	t N/A Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the access road to the controlled outfall.		Placement of riprap, rock check dams, riprap flow channel, sedimentation pond and/or wattles at the outfall slows storm water and removes sediment.	
OF-M29	Topsoil Stockpile Area (North Side of Tails at Ranger Gulch)	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the access road to the controlled outfall.	Placement of riprap, rock check dams, sedimentation pond and/or wattles at the outfall slows storm water and removes sediment. This outfall drains to Ranger Guleh which is typically dry. There is little potential for sediment to be carried down gradient from the outfall.	
OF-M30	Southwest Corner of Rectifier #6 Salvage Yard	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the access road to the controlled outfall.	Placement of riprap, rock check dams and/or wattles at the outfall slows storm water and removes sediment.	
OF-M31	Conveyor Access Road (North of Short Tunnel Below Conveyor)	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in this area is diverted via earthen berms and natural topography along the road to the controlled outfall.	Placement of rock check dams and/or wattles at the outfall slows storm water and removes sediment.	

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PS/OF #	Location	Good Housekeeping Materials Handling and Spill Prevention	Preventative Maintenance/Measures, Storm Water Diversions Measures	Sediment/Erosion Control and Management of Runoff
OF-M32	Topsoil Stockpile Area	N/A	Storm water outfalls are inspected semi-annually, and maintenance performed as needed; storm water in area is diverted via earthen berms and natural topography along the access road to the controlled outfall.	Placement of riprap, rock check dams, sedimentation pond and/or wattles at the outfall slows storm water and removes sediment.

6.0 IDENTIFICATION OF DISCHARGES OTHER THAN STORM WATER

The Mill was been evaluated for evidence of non-storm water discharges initially in 2006. Continual evaluation is completed through routine inspections and the Henderson Management of Change (MOC) process. During the initial evaluation, each pollution source and outfall were visually inspected, and no signs of non-storm water discharges were observed reporting to storm water outfalls or drainage systems. In addition, no signs of non-storm water discharge have been observed during routine inspections or identified during the MOC process. Although not observed during this evaluation, the Henderson operations have the potential for the following non-storm water discharges, which are authorized under the general storm water permit.

- Firefighting activities;
- Uncontaminated compressor condensate;
- Air conditioner condensate;
- Uncontaminated seeps and springs; and
- Foundation or footing drains.

All other non-storm water discharges are strictly prohibited unless they are collected and discharged under the facility's CDPS Individual Permit Number CO-0000230. Evaluation for evidence of non-stormwater discharges also occur during the facility's semi-annual stormwater inspections.

7.0 SWMP INSPECTIONS

7.1 Performance of Inspections

Two formal site inspections (one in the spring and one in the fall) are performed and documented to satisfy annual reporting requirements. These inspections shall be conducted by the personnel outlined in Section 3.0 of this SWMP and include a review all disturbed areas (see Figures in Appendix A for delineation of disturbed and undisturbed areas), areas used for material storage or handling that are exposed to precipitation, and other areas with potential sources of pollution with an emphasis on each of potential pollutant sources identified Section 4.0 of this SWMP.

The inspections:

- Look for evidence of, or the potential for, pollutants entering the drainage system;
- Review the adequacy and upkeep of storm water management measures, sediment and erosion control measures, and other BMPs identified in Section 5.0 of this SWMP; and
- Include a visual inspection of equipment needed to implement the Plan, such as spill response equipment.

Conditions not conforming to the SWMP shall be proactively managed and corrected. If revision of this SWMP is required, such revisions shall be made and implemented promptly.

7.2 Inspection Recordkeeping

An inspection record (see Appendix B) summarizing the scope of the inspection, personnel making the inspection, the date(s) of the inspection, major observations relating to implementation of the SWMP, and actions taken shall be maintained in the environmental files for at least three years.

8.0 ANNUAL REPORTING

An annual report shall be completed, signed by the Facility Manager, and mailed to the address below by <u>February 15th</u> of each year. The report shall be completed using the State of Colorado's "Storm Water Annual Report-Metal Mining (& Coal)" form provided on the CDPHE website:

http://www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251596875327

Mailing Address:

Colorado Department of Public Health and Environment Water Quality Control Division WQCD-P-B2 4300 Cherry Creek Drive South

Denver, Colorado 80246-1530

Completed reports, and any relevant correspondence, shall be maintained per Henderson's Environmental Records Procedure, and for no less than five (5) years.

9.0 CONSISTENCY WITH OTHER PLANS

This SWMP has been developed in conjunction with other related plans developed as part of Henderson's environmental management system including the Henderson Mill Spill Prevention Control and Countermeasures/Materials Containment Plan (SPCC/MCP), Incident Response Manual (IRM), Wildfire Management Plan, and EMS Manual and Drinking Water Monitoring Plan. As appropriate, the SWMP incorporates portions of these plans by reference.

10.0 TEMPORARY ACTIVITIES

Temporary activities, including construction projects, are addressed as an addendum to this SWMP in Appendix D.

11.0 SWMP REVIEWS, REVISIONS OR CHANGES

11.1 Division Review

The Colorado Water Quality Control Division (Division) reserves the right to request and review the plans, and to require additional measures to prevent and control pollution, as needed. Upon review of the SWMP, the Division may notify the permittee at any time that the Plan does not meet one or more of the minimum requirements of the permit. After such notification, changes shall be made and an updated Plan including requested changes shall be submitted to the Division. Unless otherwise provided, the permittee shall have 30 days after such notification to both make and implement the necessary changes to the Plan.

11.2 Permittee Review/Change

Henderson shall amend this SWMP whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the waters of the State, or if the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in storm water discharges. If existing BMPs need to be modified or if additional BMPs are necessary, the Plan changes and implementation must be completed before the next anticipated storm, or not more than **60 days** after: the change in design, construction, operation, or maintenance; or the SWMP has been determined to be ineffective, unless this time frame is extended by the Division. Amendments to the Plan shall be summarized in the Annual Report.

Appendix A Figure 1 – Mill Storm Water management Map, Mill and Tailing Area Figure 2 – Mill Storm Water Management Map, Upper Conveyor/Access Road Area Figure 3 – Mill Storm Water Management Map, Lower Conveyor/Access Road Area







Appendix B Semi-annual Inspection Form

PS #/Outfall	Comments	Action Required	Scheduled Completion	Person Responsible	Satisfactory (Y/N)
PS-M-7 Gravel Pit			Immediate60 Days		
PS-M-8 Mobile Equipment Shop and Surrounding Mill Areas			 Immediate 60 Days 		
PS-M-9 Topsoil Stockpile Area			Immediate60 Days		
PS-O-1 Conveyor & Access Road			 Immediate 60 Days 		
PS-O-2 Rectifier #6 Salvage Yard			 Immediate 60 Days 		
PS-O-3 PC2/PC3 Transfer Station			☐ Immediate ☐ 60 Days		
PS-O-4 Portal Lay Down Yard			Immediate60 Days		
PS-O-5 Upper Access Road (Near OF-M4)			 Immediate 60 Days 		

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PS #/Outfall	Comments	Action Required	Scheduled Completion	Person Responsible	Satisfactory (Y/N)
OF-M4			Immediate		
Upper Access Road SW of Conveyor at Table 512			☐ 60 Days		
OF-M5					
Conveyor Access Road (Culvert Under			Immediate		
Road at South Access Road)			🗌 60 Days		
OF-M6			Immediate		
Conveyor Access Road at Table 260			🗌 60 Days		
OF-M7					
Control Measure (BMP) Located on			Immediate		
Conveyor Access Road at Table 198			🗌 60 Days		
OF-M8			Immediate		
Below PC2/PC3 Transfer Station			🗌 60 Days		
OF-M11 Control Measure			Immediate		
(BMP) Located on					
Conveyor Access Road at Table 36			🗌 60 Days		
OF-M12					
Control Measure			Immediate		
(BMP) Located on Conveyor Access			🗌 60 Days		
Road at Table 239					

PS #/Outfall	Comments	Action Required	Scheduled Completion	Person Responsible	Satisfactory (Y/N)
OF-M14			Immediate		
Northeast Corner of Rectifier #6 Salvage Yard			🗌 60 Days		
OF-M15			Immediate		
Southwest Corner of Portal Lay Down Yard			🗌 60 Days		
OF-M17			Immediate		
Northeast of Conveyor at Table 498			🗌 60 Days		
OF-M18			Immediate		
Northeast of Conveyor at Table 512			🗌 60 Days		
OF-M19			Immediate		
Upper access road. Northwest of OF-M14			🗌 60 Days		
OF-M20			Immediate		
Southeast of Conveyor at Table 409			🗌 60 Days		
OF-M21					
Conveyor access road. North of MLGW- 11 and southeast of East Branch Reservoir.			Immediate60 Days		

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PS #/Outfall	Comments	Action Required	Scheduled Completion	Person Responsible	Satisfactory (Y/N)
OF-M23 Conveyor Access Road (North of Short Tunnel Below Conveyor)			Immediate60 Days		
OF-M24 Conveyor Access Road (South of Short Tunnel Below Conveyor)			Immediate 60 Days		
OF-M26 Topsoil Stockpile Area (West Side of Tails)			Immediate60 Days		
OF-M29 Topsoil Stockpile Area (North Side of Tails at Ranger Gulch)			Immediate60 Days		
OF-M30 Southwest Corner of Rectifier #6 Salvage Yard			Immediate60 Days		
OF-M31 Conveyor Access Road (North of Short Tunnel Below Conveyor)			Immediate60 Days		
OF-M32 Topsoil Stockpile Area			Immediate60 Days		

Each of the above items shall be inspected for:

- 1. Evidence of, or the potential for, pollutants entering the drainage system;
- 2. The adequacy and upkeep of storm water management measures, sediment and erosion control measures, and other BMPs to ensure they are operating properly; and
- 3. Adequacy and presence of designated spill response equipment.

Document any additional observations including, as applicable, locations of discharges of pollutants from the site, location of previously unidentified sources of pollutants, locations of BMPs needing maintenance or repair, location of failed BMPs that need replacement, and locations where additional BMPs are needed. Any incident of noncompliance observed shall be documented.

Any repairs or maintenance needs identified by the inspection shall be completed immediately where the potential to adversely affect water quality is imminent. Revised or additional control measures identified by the inspection shall be implemented in a timely manner, but in no case more than 60 calendar days after the inspection. Based on the results of this inspection, if revisions to the description of the potential pollutant sources and/or the pollution prevention and control measures identified in the SWMP are needed, the SWMP shall be revised as soon as practicable.

Inspection Completed By:

Signature:

Date: _____

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