PEABODY SAGE CREEK MINE

Permit C-09-087

2024 Annual Reclamation Report

January 1, 2024 to December 31, 2024

Submitted: February, 2025

PEABODY SAGE CREEK MINE (PSCM)
2024 ANNUAL RECLAMATION REPORT

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**No updates have been made, please refer to previous years ARRs for any map references*

ATTACHMENTS

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INTRODUCTION

Peabody Sage Creek Mine (PSCM) received permit approval from the Colorado Division of Reclamation Mining and Safety (CDRMS) on August 20, 2010 and began surface disturbance for the construction of an underground mine in the summer of 2011. Development mining commenced at the PSCM in the spring of 2012 using the continuous mining method. Mining in the Wadge Seam extended from four separate entries to approximately 600 feet before mining activities were idled in the fall of 2012. The Mine has remained on care and maintenance status since 2012, with activities generally limited to monitoring, site maintenance, and revegetation success monitoring for reclaimed areas.

The permit area contains 10,164 acres, of which approximately 1,844 acres were previously disturbed by Seneca Coal Company. Within the 1,844 previously disturbed/reclaimed acres, PSCM has utilized or re-disturbed an area of approximately 356 acres for future mining and related activities. Within the existing 356-acre PSCM disturbance area, no additional disturbance occurred in 2024, and no additional areas were disturbed.

No New Permitting actions occurred during 2024.

DISTURBANCE STATUS AND BOND RELEASE

Based on the CDRMS acreage accounting summary provided in the Division's comments on the 2014 PSCM Annual Reclamation Report, a total of 1,844 acres, including both interim program and permanent program areas for the former Seneca Mine (1,775 acres) and the new Sage Creek Mine (69 acres), have been disturbed within the Sage Creek Permit Area, including:

- 1,628.8 interim program and permanent program acres previously permitted under the Seneca II Mine Permit
- 146.4 Seneca II Phase III-released acres approved to be re-disturbed under the PSCM Permit as new permanent program acres
- 68.8 new permanent program acres approved to be disturbed under the PSCM Permit

For the permitted Sage Creek Mine operations, the following summarizes the relevant permit and permitted disturbance area acreages

Permit Area	10,164.0 acres
Currently Permitted Disturbance Area	356.4 acres (287.6 to be re-disturbed, 68.8 new disturbance)

PSCM submitted SL-01 and received approval (09/05/13) for Phase II bond release in 2013 on 445.8 acres of interim program and permanent program lands that had received Phase I bond release under SL-01 and SL-04 for the Seneca II Mine (C-80-005). PSCM also submitted and received approval (01/30/14) for Phase I release on 67.4 acres, and final bond release (Phase II/III) on 68.8 acres of pre-law areas under SL-02. In 2014, PSCM submitted SL-03 for Phase III bond release on 1,028 acres of

permanent program lands that had received Phase I/II bond release under SL-01, SL03, SL-04, and SL-05 for the Seneca II Mine. The SL-03 Phase III bond release was approved for 1,026 acres in May 2015. During the latter part of 2016, PSCM prepared an additional Phase III bond release application as SL-04, covering approximately 422 acres of reclaimed lands, and submitted the application in mid-January 2017. The SL-04 application was determined complete on February 22, 2017, a bond-release inspection was conducted on August 3, 2017, and Phase III bond release was approved for 418 acres on 06/21/18.

TABLE 13.1: REMAINING LIABILITY ACREAGE AND BOND STATUS				
REF.	PHASE I REMAINING	PHASE II REMAINING	PHASE III REMAINING	FULL BOND RELEASE
PRE-LAW AREAS				
SL-02 SC	67.4	0	0	68.8
INTERIM/PERMANENT PROGRAM AREAS				
SL-01/03/04 SII SL-01/03 SC SL-04 SC	38.1	90.2	253.6	1,444.0
NEW PERMANENT PROGRAM AREAS				
	146.4	146.4	146.4	0.0
TOTALS	**251.9**	**236.6**	**400.0**	**1,512.8**

DISTURBANCE AREA

In 2024, no additional acres were permitted to be disturbed, and no new disturbance occurred. The annual disturbance status is reflected on the CDRMS Annual Report Form and is further described in the text of this report. Refer to the 2018 Annual Report maps for the extent and status of the existing mine disturbance.

During 2016-2017, approximately 60,000 tons of coal that had been stockpiled on-site from the initial mine development work, was recovered and transported to the Foidel Creek Mine for processing, loading, and transport to coal customers. Site activities during 2024 included ongoing mine dewatering, and care and maintenance of the site.

BACKFILLING AND GRADING

In 2024, no new areas were backfilled or graded.

SOIL MATERIAL MONITORING

PSCM is required by Permit C-09-087 to monitor soil handling operations for Seneca II Mine, including soil salvage, storage, and redistribution.

- **Soil Recovery Documentation**
  No soil material was salvaged during 2024

- **Soil Pits - Soil/Spoil Fertility and Quality**
  No new soil material placement occurred in 2024; therefore, no soil pits were established and no soil/spoil quality samples were collected or analyzed.

- **Soil Balance**
  No soil salvage occurred in 2024. Therefore, as for the previous years, the current soil material balance reflects an average soil replacement depth of 2 feet (24 inches).

- **Soil Salvage, Storage and Replacement**
  No soil material was replaced in 2024. Stockpile A contains 91.2 acre-feet (147,150 cy) of soil material.

TABLE 13.2: TOPSOIL STOCKPILE VOLUMES	
Stockpile Designation[1]	Volume (ac.ft.)
Stockpile A	91.2
TOTAL	**91.2**

[1]*See 2013 Topsoil Removal Map for Stockpile "A" location.*

REVEGETATION

- **Seeding and Shrub Planting**
  Table 12.2, PSCM Upland Area Seed Mix, and Table 12.3, PSCM Mesic Site Conditions Seed Mix, reflect the species and seeding rates for the approved revegetation seed mixes. Although no seeding was required in 2014 through 2024, supplemental broadcast seeding was completed in 2014 for recently disturbed ditches, slopes near the portal, and selected areas within the 356.4 acre disturbance boundary to stabilize these areas and increase vegetative cover. No shrubs or trees were planted in 2024.

- **Weed Control**
  Noxious weed surveys were completed to identify areas of weed infestations on the PSCM reclaimed areas in 2024. Targeted weed control spraying was conducted using selective herbicide mixtures to control several identified species, with thistle and hounds-tongue as the primary targeted species, and secondary spraying of any areas of whitetop, mullen, and toadflax. Weed control areas will be monitored in 2025 for effectiveness and any necessary follow-up treatment.

  See Attachment B – Weed Control Logs, for details on the 2024 herbicide spray applications (actual log is on file at the mine site). Since sprayed areas were relatively small and adequately described in the weed control log, a map will not be provided with the 2024 report. Note that the building perimeters (office, shop, etc.), substations, and road perimeters were monitored and sprayed as needed.

- **Revegetation Success Monitoring**
  The CDRMS approved Minor Revision (MR-27) for minor changes to the vegetation success criteria of the solid waste disposal or landfill area. The landfill is an area comprised of approximately 8.0 acres and was approved for Phase I Bond Release as a part of SL-4 (Seneca II) in June of 2010. PSCM proposed the vegetation success criteria be changed to that of the more recently disturbed areas associated with the underground mine as described in Section 2.05.4 (Reclamation Plan) of the approved mine permit. As a result of the approved revision, only the sagebrush reference area will be used for revegetation

success evaluations for the reasons described in Section 2.05.4(2)(e)(vi) of the PSCM permit as the pre-mine area of the landfill was predominantly sagebrush.

TABLE 13.3
PSCM UPLAND AREA SEED MIX

Scientific Name	Common Name	PLS Pounds per Acre	# Seeds/sq. ft
Elymus lanceolatus ssp dasystachyum	Thickspike wheatgrass	0.5	1.8
Elymus lanceolatus ssp riparium	Streambank wheatgrass	0.5	1.8
Pascopyrum smithii	Western wheatgrass	1.0	2.5
Pseudoroegneria spicata ssp. inermis	Beardless bluebunch wheatgrass	0.5	1.4
Elymus trachycaulus ssp. trachycaulus	Slender wheatgrass	1.0	3.7
Bromus marginatus	Mountain brome	1.0	1.5
Leymus cinereus	Great Basin wildrye	1.0	3.0
Festuca saximontana	Rocky Mountain fescue	0.1	2.8
Poa secunda ssp ampla	Big bluegrass	0.1	2.0
Nosella viridula	Green needlegrass	1.0	4.2
Medicago sativa	Alfalfa var. falcata	0.1	0.5
Balsamorhiza sagittata	Arrowleaf balsamroot	0.5	0.6
Penstemon strictus	Rocky Mountain penstemon	0.25	3.4
Penstemon palmeri	Palmer penstemon	0.1	1.4
Achillea millefolium var. occidentalis	Western yarrow	0.1	6.4
Lupinus caudatus	Tailcup lupine	1.0	0.4
Aster chilensis (ascendens)	Western aster	0.1	6.1
Linum lewisii	Blue flax	0.5	2.0
Artemisia arbuscula	Low sage	0.25	5.6
Artemisia tridentata ssp vaseyana	Mountain big sagebrush	0.25	14.3
Symphoricarpos oreophilus	Mountain snowberry	0.5	0.6
Purshia tridentata	Antelope bitterbrush	1.0	0.3
Totals		**11.35**	**66.3**

** Broadcast seeding is double the rate indicated*

TABLE 13.3 MESIC AREA SEED MIX			
Scientific Name	**Common Name**	**PLS Pounds per Acre**	**# Seeds/sq. ft.**
Pascopyrum smithii	Western wheatgrass	2.0	5.0
Elymus trachycaulus ssp. trachycaulus	Slender wheatgrass	2.0	7.4
Agrostis alba (gigantea)	Redtop	0.1	11.2
Alopecurus arundinaceus	Creeping foxtail	0.25	4.5
Bromus marginatus	Mountain brome	2.0	3.0
Leymus cinereus	Great Basin wildrye	1.0	3.0
Leymus triticoides	Creeping wildrye	2.0	3.9
Carex nebrascensis	Nebraska sedge	0.25	3.1
Carex rostrata	Beaked sedge	0.25	2.6
Achillea millefolium var. occidentalis	Western yarrow	0.1	6.4
Aster chilensis (adsenduns)	Pacific aster	0.1	6.1
Lotus corniculatus	Bird's-foot trefoil	0.25	2.1
Artemisia cana	Silver sagebrush	0.25	4.9
Rosa woodsii	Woods rose	1.0	1.0
Ribes aureum	Golden currant	0.25	2.0
Total		**11.80**	**66.2**

** Broadcast seeding is double the rate indicated.*

- **Grazing and Land Management**

  Approximately 800 Cattle (yearling steers) were moved onto the PSCM reclaimed area in July 2023 and moved off by mid-September 2024. See the 2013 Grazing Plan Map, for pasture locations (areas grazed are the same as those shown on the 2013 map). This grazing schedule resulted in a total of 960 (800 x 1.5 mo x 0.8) AUM's for 2024.

  Assumptions:
  1 yearling = 0.8 AUM, requiring 648 pounds of forage per month (one AUM requires 810 pounds of forage)

  The AUM's and utilization are calculated using the following assumptions:

  Assumptions:
  Average production = 3,410 lbs/acre

  Optimal usage would call for half of forage to be grazed. Equal to 1,560 lbs/acre

  Total grazed area = 2,541 acres (includes Seneca II area of 351.2 acres, because a single pasture extends into both permit areas

One AUM requires 810 lbs. of forage

1,560 lbs/acre (x) 2,541 acres = 3,963,960 lbs. of total forage produced
810 lbs. of forage (x) 960 AUM's = 777,600 lbs. of forage required;

777,600/3,963,960 x 100 = **19.6% utilization**, well below the available forage of the PSCM grazed reclaim area.

A lightning strike caused a brush-fire in late-September 2018, burning approximately 20 acres in T^N, R87W, Section 34, before it burned out. The vegetation has since recovered well on its own.

SEDIMENTATION POND SURVEYS

PSCM is required by Permit to periodically monitor sedimentation ponds for sediment storage capacities. Monitoring provides a sediment yield history and gives advance warning to operations personnel when sediment clean-out work is required. Past data has shown reduced sediment transport and deposition as vegetation has become established. The surveys from 2006 to present show sediment storage capacities that are more than adequate. Because surface mined areas have been reclaimed and have been revegetated for several years, the available storage capacities aren't expected to change significantly. Additionally, potential sediment contributions to Pond 002 are buffered by the lower sediment pond from newly disturbed areas associated with the underground mine.

Consistent with Rule 4.05.9(14), each pond is inspected annually by a qualified professional specialist under the direction of a professional engineer or a qualified registered professional engineer. The submitted reports comply with all requirements of Rule 4.05.9(15). Ponds are also visually inspected quarterly by mine personnel. During these inspections, any significant observed change in sediment storage or noticeable expansion of the sediment delta at the inlet to the pond are noted as indications of conditions requiring pond maintenance. To assure that adequate sediment storage capacities are maintained and taking into consideration the level of vegetative reestablishment on the reclaimed areas, PSCM has committed to sediment and pond storage capacity surveys every 10 years beginning in 2016. The table below has been updated to reflect the 2016 sediment and pond capacity survey. The 2016 survey confirms that all ponds have sufficient active storage capacity to meet design requirements.

The following table lists the latest surveyed capacities of PSCM sediment ponds:

TABLE 13.4 SEDIMENT POND CAPACITIES

Pond Number	2006 Capacity	2008 Capacity	2010 Capacity	2012-2014 Capacity	2016 Capacity	Minimum Allowable Water Storage
Pond 002	171.9	NA	NA	Not surveyed	177.7	84.6 ac.ft.
Pond 003	3.7	NA	NA	Not surveyed	3.4	2.1 ac.ft.
Pond 004	5.6	5.5	5.5	Not surveyed	8.1	3.0 ac.ft.

STOCK TANKS

There are 13 stock-tanks or stock-ponds in the PSCM mined/reclaimed area, and most are classified as permanent and have received phase III bond release. No new stock tanks/ponds were constructed during 2023.

WILDLIFE MONITORING

Wildlife monitoring was conducted in cooperation with Colorado Parks and Wildlife (CPW) during 2017. Under Temporary Cessation, suspension of the wildlife monitoring was approved in January 2017. The work included:

Monitoring of Golden Eagle nest sites

A total of 6 sites were identified for monitoring as part of the original permit approval. Three were believed to have been destroyed by natural causes. The remaining three nests were monitored in 2017. The only nest that appeared to be in active use was Site GOGA 2A, and observations indicated that Site GOGA 2F was being used by a turkey vulture (*Cathartes aura*).

Monitoring four known Columbian sharp-tailed grouse leks and checking for new ones

The following summarizes the grouse counts at the 4 established leks on the PSCM reclaimed area for 2017 (most recent data available from CPW). These numbers represent a decrease in the number of grouse observed on these leks, however, grouse counts were down throughout Northwest Colorado, possible due to weather conditions during the the two previous winters.

Seneca Mine 1 Lek	3 males
Seneca Mine 2 Lek	18 males
Seneca Mine 3 Lek	11 males
Seneca Mine 4 Lek	2 males

CDPS PERMIT UPDATE

A renewal application for the CDPS permit for the Sage Creek Mine property (Permit CO-0048275) was filed on April 9, 2011. A draft permit was issued on July 18, 2014. The draft permit included a number of significant changes from the original permit, and PSCM provided extensive comments on the draft permit on August 15, 2014. After a significant delay, the CDPHE-WQCD issued the final permit on November 16, 2015. The final permit did not reflect any significant modifications from the draft permit and continued to include provisions which would represent ongoing and future compliance concerns for permit implementation. Given this situation, PSCM filed a formal permit appeal on December 14, 2015. Subsequent to a series of associated legal actions, a hearing before an Administrative Law Judge (ALJ) on the permit appeal was held on July 31, 2017 through August 2, 2017. The judge issued an initial decision on September 7, 2017, which for the most part negated the permit provisions which represented compliance concerns. Review by the CDPHE Executive Director resulted in a Final Order on 01/17/19 overturning key provisions of the ALJ decision.

PSCM has also pursued site-specific standards reflecting naturally degraded ambient conditions for several water quality parameters, due to geologic and other considerations. In a hearing before the Water Quality Control Commission on December 11, 2017, PSCM presented information and documentation in support of the proposed site-specific standards. After hearing testimony from PSCM and other interested parties, the Commission elected to apply temporary modifications for the

parameters of concern (iron and selenium) to allow for additional data collection and resolution of some other related regulatory issues.

In 2020 PSCM submitted a renewal application for permit CO-0048275, The renewal has not been issued and the permit remains under administrative extension.

LITERATURE CITED

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Seneca II Mine. Permit Application Package, Permit No.C-80-005

2011 Annual Reclamation Report, Peabody Sage Creek Mine, Routt County, Colorado. Submitted to the Division of Reclamation, Mining and Safety in March 2012 Submitted by Peabody Sage Creek Mining, LLC., Hayden, Colorado.
Peabody Sage Creek Mine. Permit Application Package, Permit No.C-09-087

2012 Annual Reclamation Report, Peabody Sage Creek Mine, Routt County, Colorado. Submitted to the Division of Reclamation, Mining and Safety in March 2013 Submitted by Peabody Sage Creek Mining, LLC., Hayden, Colorado.
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2013 Findings of Compliance and Proposed Decision for Phase II Bond Release SL-1
Division of Reclamation, Mining and Safety, Denver, CO
Response to Application for Phase II Bond Release.
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2014 Evaluation of Revegetation Success for Phase II Bond Release BRB PSCM-3
Division of Reclamation Mining and Safety, Denver, CO
Prepared by ESCO Associates Inc.