



**SENECA IIW MINE**  
Permit C-1982-057

**2021 Annual Reclamation Report**  
January 1, 2021 to December 31, 2021

***Submitted: March 2022***

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*\* Refer to the 2014 Annual Reclamation Report for the following, unchanged maps:*

2014 Chronological Seeding (no change since 2014, updated Map Submitted with 2019 ARR review)

2014 Planned Reclamation (no change since 2014)

## **ATTACHMENTS**

2021 Weed Control Logs

## SENECA IIW MINE 2021 ANNUAL RECLAMATION REPORT

### **2021 DISTURBANCE AREA**

The total Seneca IIW disturbance acreage reported in 2013 was 1,290.2 acres. A Bond Release Tracking Initiative initiated by SCC in 2014 consolidated all previous mapping information in a GIS (Geographic Information System) format, resulting in a corrected disturbance area of 1,291.5 acres. The referenced 2014 Planned Reclamation map portrays the physical disturbance boundaries and areas. No additional areas were disturbed during 2021.

### **BACKFILLING AND GRADING**

No additional areas were backfilled and graded in 2021.

### **SOIL AND SPOIL MONITORING**

Seneca Property, LLC (SP) is required to monitor soil and spoil handling operations, including salvage, storage, and redistribution of for the Seneca IIW Mine. In 2021 no soil or spoil material was salvaged, stored, or redistributed and no soil/spoil sampling or monitoring was conducted.

- **Soil Recovery Documentation** – No additional soil or spoil materials were recovered during 2021.
- **Soil Replacement Thickness** - No soil or spoil materials were replaced during 2021.
- **Soil Pit – Soil Fertility/Spoil Suitability** – Given that no soil or spoil materials were replaced, no soil fertility or spoil suitability samples were collected or analyzed in 2021.
- **Soil Balance** - SP submitted a soil material balance with Permit Revision PR-04 (dated 9/04). The soil balance has not been revised because Seneca IIW is reclaimed except for permanent roads and facilities areas.

**Soil Salvage and Storage.** No additional soil was salvaged during 2021. The life-of-mine disturbance from which soil was salvaged (1,291.5 acres) and the soil stockpile locations as of December 31, 2015 (no change subsequent to 2012) are shown the 2012 Soil Replacement Map, and 2014 Planned Reclamation Map

The remaining stockpile volumes as of December 31, 2015 are listed below in Table 13.1, Soil Stockpile Volumes. As of the end of 2021, 7.0 acre-feet (11,300 cy) of soil remain stockpiled in the mining area.

**Soil Replacement.** No soil was replaced during 2021, therefore the total remaining mine disturbance area requiring soil replacement (as of December 31, 2021) is 10.0 acres. The remaining acreage requiring soil replacement corresponds to sedimentation pond areas, which remain to provide sediment control for the reclaimed areas. In most cases, it is anticipated that these ponds will be retained as permanent structures (stock ponds) to support the postmining land uses, subject to application and approval of a request for permanent retention.

**Soil Replacement Thickness.** The overall soil replacement thickness for the IIW disturbed areas was originally projected to be 1.3 feet. The soil balance for the remaining disturbed areas was calculated as follows:

### Mine Area Summary

Total Disturbance Area	= 1,291.5 acres
Permanent Facilities & Soil Replaced	= 1,281.5 acres
Remaining Disturbed Areas Requiring Soil	= 10.0 acres
Soil in stockpiles (Table 13.1)	= 7.0 ac-ft
Mean Replacement Depth	= 0.7 feet (8.4 inches)

**TABLE 13.1 - SOIL STOCKPILE VOLUMES (as of 12/31/13 – No change subsequently)**

Stockpile Designation	2008 Volume (ac-ft)	2009 Volume (ac-ft)	2010 Volume (ac-ft)	2011 Volume (ac-ft)	2013 Volume (ac-ft)
I	41.6	41.6	41.6	0.0	0.0
J	0.0	0.0	0.0	0.0	0.0
L	0.0	0.0	0.0	0.0	0.0
P2	0.0	0.0	0.0	0.0	0.0
AA	0.0	0.0	0.0	0.0	0.0
BB	26.9	26.9	26.9	13.5	0.0
CC	0.0	0.0	0.0	0.0	0.0
GG	0.0	0.0	0.0	0.0	0.0
HH	0.0	0.0	0.0	0.0	0.0
JJ	0.0	0.0	0.0	0.0	0.0
KK	1.4	1.4	1.4	1.4	1.4
PP	0.0	0.0	0.0	0.0	0.0
QQ	0.0	0.0	0.0	0.0	0.0
RR	0.0	0.0	0.0	0.0	0.0
SS	0.0	0.0	0.0	0.0	0.0
TT	0.0	0.0	0.0	0.0	0.0
UU	0.0	0.0	0.0	0.0	0.0
VV	0.0	0.0	0.0	0.0	0.0
WW	0.0	0.0	0.0	0.0	0.0
XX	5.6	5.6	5.6	5.6	5.6
YY	0.0	0.0	0.0	0.0	0.0
ZZ	0.0	0.0	0.0	0.0	0.0
AAA	0.0	0.0	0.0	0.0	0.0
CCC	0.0	0.0	0.0	0.0	0.0
DDD	0.0	0.0	0.0	0.0	0.0
<b>II-W MINE TOTAL</b>	<b>75.5</b>	<b>75.5</b>	<b>75.5</b>	<b>20.5</b>	<b>7.0</b>

**Spoil Monitoring.** During a CDRMS inspection following snowmelt, surface cracking and a visible slump were noted on the slope between Pond 006 and the haulroad to the south. SP coordinated with Northwest Colorado Consultants (NWCC) to complete field observations, selective drilling, and a stability evaluation, along with remediation recommendations. The field activities were completed during July and August, 2016, and the NWCC Report was received in mid-October, 2016. SP has monitored site conditions following snowmelt since spring 2017 and no indications of significant additional movement have been noted. Unless site conditions change significantly, indicating the need for more immediate action, SP anticipates that remedial measures will be implemented in conjunction with final site reclamation activities within the next few years.

## **REVEGETATION**

- **Seeding and Shrub Planting**

**Seeding.** No additional areas were seeded in 2021. Inter-seeding of some areas of minor disturbance and where needed including the snow fence area, PM-4 drainage, and at the base of the 005 E1 and 005 Gulch drainages was done in 2014. Table 13.2 (below) is the approved seed mix for upland sites and ephemeral drainages.

**Shrub Planting.** No additional tree or shrub planting occurred during 2021. In 2014, 4,343 trees were planted as part of the snow-fence project to reduce the amount of snow settling in the PM-4D drainage channel. A wooden structure was constructed with shrubs and trees on the lee side of the fence where snow will accumulate. Eventually the shrubs and trees will grow to create a natural snow fence.

**The types and number of trees planted included:**

Rocky Mountain Juniper	700
Ponderosa Pine	500
Douglas Fir	700
Narrowleaf Cottonwood	880
Aspen	<u>1,563</u>
<b>Total</b>	<b>4,343</b>

- **Monitoring** – Cedar Creek Associates, Inc. conducted successful Year 1 - Phase III vegetation success monitoring on approximately 804 acres (as shown on Map 1) of eligible reclamation during the summer and fall of 2015, followed by Year 2 monitoring in 2016. The combined 2015/2016 monitoring reports have been received and reviewed, and SP has submitted and received a Phase III Bond Release on the acreage.
- Cedar Creek Associates, Inc. conducted successful Year 1 - Phase III vegetation success monitoring on approximately 363 acres of eligible reclamation during the summer and fall of 2018, followed by Year 2 monitoring in 2019. The combined 2018/2019 monitoring reports have been received and reviewed, and SP has submitted and received a Phase III Bond Release on the acreage.
- **Weed Control** - A noxious weed survey was completed for the IIW Mine area in the spring of 2021 to determine the need or level of re-treatment necessary for areas sprayed in 2020 and to identify any new weed infestations.

Canada thistle was the primary target species in all control areas, with lesser activity directed toward areas of hounds-tongue and whitetop. The applied herbicide consisted of a tank mix of Milestone, Activator 90, and Journey, Banvel, or Weedone LV6, dependent on the targeted weed(s). Control areas were sprayed in June, and July. See the attached 2021 Weed Spray Logs for the locations and quantities sprayed.

Spot-spraying was used for targeted weed control, reducing potential impacts to adjacent desirable vegetation. The weed control areas will continue to be monitored in 2022 for effectiveness and any necessary retreatment.

- **Grazing** - Cattle (100 cow/calf pairs) were moved onto the Seneca IIW reclaim area in June and moved off by Early September. This grazing schedule resulted in a total of 208 AUMs for 2021. See attached 2013 Grazing Plan Map for pasture locations (areas grazed in 2021 are the same as those shown on the 2013 map).

***Assumptions:***

- One (1) cow/calf pair = 1.2 AUM, One (1) AUM requires 810 lbs. of forage
- 50 days (x) 100 cow/calf pairs x 1.2 = 6,000/30 days = 200 animal unit months (AUMs)
- 2,430 lbs/acre (x) 685.2 acres = 1,665,036 lbs of forage available
- 810 lbs (x) 200 AUMs = 162,000 lbs of forage required
- Therefore; 162,000 /1,665,036 (x) 100 =9.7% utilization of the Seneca IIW reclaim areas.

**TABLE 13.2**  
**SEED MIX NO. 1 – UPLAND SITES AND EPHEMERAL DRAINAGES**

Species Name		Drill Rate*		Recommended
		P.L.S.	Seeds/Ft <sup>2</sup>	
Scientific	Common	lbs/Acre		Variety
<u>Elymus lanceolatus(dasystachyum)</u>	Thickspike wheatgrass	0.50	1.9	Critana
<u>Elymus lanceolatus (riparium)</u>	Streambank wheatgrass	0.50	1.9	Sodar
<u>Pascopyrum smithii</u>	Western wheatgrass	1.10	2.7	Rosana
<u>Pseudoroegneria spicata spicata</u>	Bluebunch wheatgrass	0.50	1.7	Goldar
Or <u>Elymus wawaensis</u>				Secar
<u>Elymus trachycaulus trachycaulus</u>	Slender wheatgrass	1.10	3.8	San Louis
<u>Ceratochloa carinata</u>	Mountain brome	1.10	1.7	Bromar
<u>Dactylis glomerata</u>	Orchardgrass	0.03	0.4	Paiute
<u>Leymus cinereus</u>	Basin wildrye	1.10	4.1	Trailhead
<u>Festuca brachyphylla coloradensis</u>	Alpine fescue	0.10	1.8	Native
Or <u>Festuca idahoensis</u>				Joseph or Nezpurs
Or <u>Festuca ovina</u>	Sheep fescue			Covar
<u>Poa ampla</u>	Big bluegrass	0.10	2.7	Sherman
<u>Poa compressa</u>	Canada bluegrass	0.05	3.1	Ruebens
<u>Stipa viridula</u>	Green needlegrass	1.10	4.4	Lodorm
<u>Medicago falcata</u>	Alfalfa	0.10	0.5	Travois
<u>Balsamorhiza sagittata</u>	Arrowleaf balsamroot	0.50	0.6	Native
<u>Penstemon strictus</u>	Rocky Mtn penstemon	0.25	1.6	Bandera
<u>Penstemon palmeri</u>	Palmer penstemon	0.10	1.4	Cedar
<u>Achillea lanulosa</u>	Western yarrow	0.10	6.4	Native
<u>Lupinus caudatus</u>	Tailcup lupine	1.00	0.6	Native
<u>Virgulaster ascendens</u>	Pacific aster	0.10	6.1	Native
<u>Adenolinum lewisii</u>	Blue flax	0.50	3.3	Appar
<u>Seriphidium vaseyanum</u>	Mtn. big sagebrush	0.25	10.0	Native
<u>Symphoricarpos rotundifolius</u>	Mountain snowberry	0.50	0.9	Native
<u>Purshia tridentata</u>	Antelope bitterbrush	1.00	0.4	Native
Total		11.68	62.0	

\*Broadcast rate is double the drill seeding rate

P.L.S. = Pure Live Seed

Granite Seed Co. seed-mix did not include:

- Tailcup lupine – not available
- Mountain Snowberry – not available
- Pacific aster – not available



## **CHRONOLOGICAL HISTORY OF REVEGETATION & BOND RELEASE**

As of 2021, all disturbed areas not deemed permanent have been seeded. Total areas seeded and revegetated prior to 2021 are shown on 2012 annual reclamation report Chronological Seeding Map. SP submitted SL-5 requesting Phase II bond release on eligible areas, which was approved on approximately 798 acres (as shown in Figure 2) on 08/27/14. SP completed revegetation success monitoring for Phase III bond release during 2015 – 2016 and 2018-2019. The results of these monitoring efforts were incorporated into SL6 and SL7 Bond Release submittal packages resulting in Phase III release of 1,183.6 acres. SP also submitted a request for bond reduction in December 2016, which was subsequently approved on July 24, 2017.

## **SEDIMENTATION POND SURVEYS**

SP monitors sedimentation ponds for sediment storage capacities. Up through 2015, this monitoring was conducted by physically surveying each pond each year. This schedule provided a sediment yield history and gave advanced warning to operations personnel when sediment clean-out work was needed. Also, SP visually inspects each pond, at a minimum, quarterly each year. 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 conditions requiring pond maintenance.

Because the mined areas have been reclaimed and revegetated for several years, the available storage capacities typically do not change significantly from year to year, so a request was submitted and approved to monitor sediment accumulations on a 5-year schedule for ponds that flow year-round and to visually inspect any other ponds. The results of the 2014 annual survey indicated that all ponds are above the minimum requirement for storage as summarized by Table 13.3, Sediment Pond Capacities. The pond surveys were not completed in 2020 due to a lack of manpower, they are planned for 2022.

<b>TABLE 13.3 SENECA IIW SEDIMENT PONDS - WATER CAPACITY TRENDS</b>								
<b>Pond ID</b>	<b>Required Capacity<sup>1</sup> (ac-ft)</b>	<b>Current Remaining Water Capacity<sup>2</sup> (ac-ft)</b>						
<b>YEAR</b>		<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>II-W - 005</b>	1.8	5	4.9	4.9	4.3	4.3	5.4	5.3
<b>II-W – 006*</b>	4.44	4.8	5.3	5.3	5.3	5.3	5.3	5.9
<b>II-W - 009</b>	4.35	7.2	7.3	7.3	6.6	6.6	7	6.8
<b>II-W – 015*</b>	2.41	2.8	2.9	3	2.8	2.9	2.7	2.6
<b>II-W – 016*</b>	2.804	3.3	3.7	3.9	3.8	3.8	3.7	3.3
<b>II-W – 017*</b>	1.68	5.6	5.6	5.4	4.8	4.7	5.5	5.1

*\*Next Survey 2022*

*(1) Based on SEDCAD results for a 10yr/24hr storm event.*

*(2) Remaining capacity below principal spillway or orifice.*

## **STOCK TANKS**

There are currently 11 stock-tanks or stock-ponds in the Seneca IIW area, and all are permanent. Inspections reports for all stock-ponds have been previously submitted. No new stock-ponds//tanks were constructed in 2021.

## **WILDLIFE MONITORING**

Wildlife monitoring was conducted in cooperation with Colorado Parks and Wildlife (CPW) during 2019 but not 2021. The 2019 work included:

Monitoring three known Columbian sharp-tailed grouse leks and checking for new ones - The following summarizes the grouse counts at the three established leks on the Seneca IIW area (counts were up slightly from previous years).

Seneca IIW + Satellite	15 males
Seneca IIW2	4 males
Seneca IIW3	0 males

## **PERMITTING AND COMPLIANCE**

Bond Release Submittals SL6 and SL7 were approved spring 2021. RN7 was approved and final in February 2021.