C/007/042 Incoming
#4727

Sunnyside Cogeneration Associates

P.O. Box 10, East Carbon, Utah 84520 • (435) 888-4476 • Fax (435) 888-2538

January 6, 2015

Daron Haddock
Division of Oil Gas and Mining
1594 West North Temple, Suite 1210
Salt Lake City, UT 84116

RE: Star Point Conditional Approval of NOV #12148 – Task ID #4727 – Clean Copies
Sunnyside Cogeneration Associates, Star Point Waste Fuel, C007/042

Dear Mr. Haddock,

As requested in your December 22, 2014, conditional approval letter, SCA is submitting two (2) clean copies of the amendment documents for incorporation.

We look forward to receiving your final approval with a stamped incorporated copy for insertion into our Mining and Reclamation Permit.

If you have any questions, please feel free to call Rusty Netz or myself at (435) 888-4476.

Thank You,

Gerald Hascall
Agent For
Sunnyside Cogeneration Associates

c.c. Rusty Netz
Plant File

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APPLICATION FOR COAL PERMIT PROCESSING

Permit Change ☐ New Permit ☐ Renewal ☒ Exploration ☐ Bond Release ☐ Transfer ☐

Permittee: Sunnyside Cogeneration Associates
Mine: Star Point Waste Fuel **Permit Number:** C/007/042
Title: Culvert Removal - Clean Copies - Task 4727

Description, Include reason for application and timing required to implement:

Site needs have changed and some culverts can be removed and allow the open channel ditch to extend through where the culvert was.

Instructions: If you answer yes to any of the first eight questions, this application may require Public Notice publication.

☐ Yes ☒ No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: 0.00 ☐ increase ☐ decrease.
☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order? DO# _____
☐ Yes ☒ No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes ☒ No 4. Does the application include operations in hydrologic basins other than as currently approved?
☐ Yes ☒ No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes ☒ No 6. Does the application require or include public notice publication?
☐ Yes ☒ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
☒ Yes ☐ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☒ Yes ☐ No 9. Is the application submitted as a result of a Violation? NOV # 12148
☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies?
Explain: _____
☐ Yes ☒ No 11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
☐ Yes ☒ No 13. Does the application require or include collection and reporting of any baseline information?
☐ Yes ☒ No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
☐ Yes ☒ No 15. Does the application require or include soil removal, storage or placement?
☐ Yes ☒ No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
☒ Yes ☐ No 17. Does the application require or include construction, modification, or removal of surface facilities?
☒ Yes ☐ No 18. Does the application require or include water monitoring, sediment or drainage control measures?
☒ Yes ☐ No 19. Does the application require or include certified designs, maps or calculation?
☐ Yes ☒ No 20. Does the application require or include subsidence control or monitoring?
☐ Yes ☒ No 21. Have reclamation costs for bonding been provided?
☐ Yes ☒ No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
☐ Yes ☒ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?
☐ Yes ☒ No 24. Does the application include confidential information and is it clearly marked and separated in the plan?

Please attach three (3) review copies of the application. If the mine is on or adjacent to Forest Service land please submit four (4) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Gerald Hascall	Plant Manager	1/7/2015	Gerald Hascall
Print Name	Position	Date	Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 7th day of January, 2015

Notary Public: Jody Hansen, state of Utah.

My commission Expires: 12/23/15
Commission Number: 650231
Address: 1 Power Plant Road
City: Sunnyside State: UT Zip: 84539

} ss:

JODY HANSEN
Notary Public
State of Utah
Comm. No. 650231
My Comm. Expires Dec 23, 2015

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining
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Form DOGM- C1 (Revised December 10, 2007)

APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Sunnyside Cogeneration Associates
Mine: Star Point Waste Fuel
Permit Number: C/007/042
Title: Culvert Removal - Clean Copies - Task 4727

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☒ Replace	☐ Remove	Drawing 731.720a
☐ Add	☒ Replace	☐ Remove	Drawing 731.720b
☐ Add	☒ Replace	☐ Remove	Drawing 534.100e
☐ Add	☒ Replace	☐ Remove	Permit Text pages 700-36 thru 700-38 and 700-65
☐ Add	☒ Replace	☐ Remove	Permit Text Pages 500-14 thru 500-16 and 500-22
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

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sediment ponds and diversion ditches. Details (including design drawings and calculations) for all sediment control ponds and diversion ditches are included in Chapter Seven, Section 720. All sediment ponds will be inspected as outlined for impoundments in Section 514. All impoundments meet or exceed the permanent program performance standards.

526.400. Air Pollution Control Facilities.

SCA will continue its programs in the SCA - Star Point Permit Area to comply with the requirements of the Clean Air Act and other applicable air quality laws and regulations, as well as health and safety standards. A copy of the SCA Air Quality permit is included in Exhibit 421a.

To control fugitive dust, roads around the main complex which are being used by mobile equipment will be treated with calcium chloride, potassium chloride, or other acceptable biodegradable, organic wetting agents or sprayed with water as required during dry periods as required by SCA's Air Quality Permit.

527. TRANSPORTATION FACILITIES.

527.100-200. Road Classification.

All transportation facilities are shown on Map 521.100a and 521.100b. Photos are included in Exhibit 526.112a. Three classifications of roads exist within the SCA Star Point Permit Area. These are as follows:

Primary Roads – roads within the permit area with frequent, long-term heavy use. Typically this includes the haul road for transport of the fuel being mined. Design information is included in the permit for these roads and includes plan, profile and cross section information.

Ancillary Roads – roads within the permit area with infrequent, limited or short-term use not intended for hauling of the fuel being mined. Typically, these roads include access roads to ponds, reference areas, monitoring sites, disposal areas, etc. Design information is included in the permit for these roads and includes plan, profile and cross section information.

Pit Roads – roads in the active mining section of the refuse pile. The locations of these roads change as mining progresses and may or may not be shown on current maps. Typically these roads do not include design criteria in the plan.

The primary and ancillary roads within the SCA Star Point Permit Area are identified on maps 534.100a through 534.100h and are labeled roads D, F, G, H, K, L, M, and P (Haul Road). Road M is a future road that is not anticipated to exist until hauling of Refuse Pile B and C. Road K is also a future road that is not anticipated to exist until reclamation time. Primary and ancillary roads are further discussed in Sections 527.210 and 534.

Table 527.100a Road Classification

Road	Type and Frequency and Duration of Use
Ancillary Road G to Pond 6	Occasional Access through Life of mine
Ancillary Road H to Pond 5	Occasional Access through Life of mine
Primary Road D	Regular use by haul trucks to access refuse pile
Primary Road F	Infrequent by haul trucks to access refuse pile
Primary Road L	Regular use by haul trucks to access refuse pile
Future Primary Road K to Subsoil Area	Not in existence until reclamation then 2-3 months earthwork equipment during reclamation
Future Primary Road M to Refuse Pile B and C	Not in existence until hauling Refuse Pile B and C materials
Primary Road P (Haul Road)	Infrequent Fuel Hauling. May have haul use in the future

Railroad systems near to the SCA - Star Point Permit Area consist of spur lines and main rail lines owned by Utah Railway Company (URC). A small portion of railroad passes near the southeast corner of the SCA - Star Point Permit Area east of the refuse pile. SCA does not control any trackage of any of the rails.

527.210. Design and Specifications.

Ancillary Road G (Access to Pond 6) – The access road to Pond 6 is called Road G. The road is approximately 10 to 12 feet wide and the grade ranges from 0 to 15%. This road is dirt. Between stations 109+00 to 122+00 where grades are steeper, water bars are spaced at approximately 40 feet.

Ancillary Road H (Access to Pond 5) – The access road to Pond 5 is called Road H. The road is approximately 10 to 12 feet wide and the grade ranges from 0.8 to 12.2%. This road is dirt.

Primary Road D (Access to Refuse Pile A) – This access road is intended for regular use by haul trucks to provide access to the northeasterly point of Refuse Pile A. The 20'-60' wide road will have a gravel or road base surface and a grade that ranges from 0% to 10%. This road will also facilitate loading of excavated material from the refuse pile.

Primary Road F (Access to Refuse Pile A) – This access road is intended to provide an access road to the refuse pile at a more gentle grade than the Primary Road P (Haul Road) and facilitates more efficient travel. The 15-35 ft. road has a maximum grade of 5% and crosses portions of old asphalt parking lot and also has a gravel surface. Use is currently infrequent, but may have increased use in the future.

Primary Road L (Access to Refuse Pile A and Disposal Area) – The one way access road to the middle of Refuse Pile A and the Disposal Area is called Road L. The road is approximately 15 to 30 feet wide and the grade ranges from 0% to 6.2%. This road is surfaced with gravel or road base. The road provides additional access to the south side of Pond 9.

Future Primary Road K (Access to Subsoil Area) – The access road to the Subsoil Area is called Road K. The proposed road is approximately 10 to 25 feet wide and the grade ranges from 13% to 23%. Water bars are spaced at approximately 40 feet where grades are steeper between Stations 2+00 and Station 3+70.80. This road will be a dirt road. Prior to construction of Road K, topsoil will be salvaged in accordance with the plan outlined in Section 232.

Future Primary Road M (Access to Refuse Pile B and C) – The access road to Refuse Pile B and C is called Road M. The proposed road is approximately 10 to 24 feet wide and the grade ranges from 0% to 10.9%. This road will be a dirt road.

Primary Road P (Haul Road) – This is formerly the preferred access road to the coal refuse pile. The road is approximately 12 to 30 feet wide and the grade ranges from 0 to 11%. This road is dirt with some gravel surfacing. Use is currently infrequent, but may have increased use in the future. Unneeded segments of the old road may be reclaimed when other reclamation work is done in this area.

527.220. Relocation of a Natural Drainageway.

No natural drainage will be relocated because of roads.

527.230. Maintenance and Repairs.

All roads will be maintained in safe condition. If a road is damaged it will be repaired as soon as practical.

527.240. Geotechnical Analysis.

No alternative specifications are required.

528. HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL, AND COAL MINE WASTE.

528.100. Coal Removal, Handling, Storage, Cleaning, and Transportation Areas and Structures.

All coal refuse, which is to be mined, is located within the permit boundary. The coal refuse will be excavated as explained in Section 523. All processing of the coal refuse will be completed in an approved manner outside of this SCA - Star Point Permit Area. Coal Refuse that is unusable (rejects) will be discarded in the disposal area as shown in Map 521.100a. Normally coal mine wastes would be disposed of in a refuse pile. However, due to the nature of this operation, that of excavating the existing refuse piles for fuel, disposal of rejects back on the refuse pile where they came from would impede the ability to continue the excavation.

533.600-700. MSHA Impoundments.

There are no impoundments that meet or exceed 30 CFR 77.216(a) criteria. Also, See Exhibit 513.

534. ROADS.

There are two ancillary roads, Road G, and Road H, which are within the SCA - Star Point Permit Area. In addition, there are four existing primary roads, Road P (Haul Road) and Roads D, F and L, and two proposed primary roads, Road K to access the Subsoil Area and Road M to access Refuse Pile B and C. The plan, profile, and cross section of Roads D, F, G, H, K, L, M and Road P (Haul Road) are shown on Maps 534.100a through 534.100h. All other roads are temporary pit roads, which may change with the progress of excavation. Existing access roads are in place to the Subsoil Area, additional roads may be desired at the time of reclamation to improve the operation of hauling soil material. Prior to construction of Road K, topsoil will be salvaged in accordance with the plan outlined in Section 232. Additional design and sediment control facilities for these roads if needed will be provided prior to construction of new roads. Road specifications can be found on Table 534.200a, Road Specifications. Exhibit 534 includes the calculation of the road embankments meeting the safety factor of 1.3 or greater.

TABLE 534.200a. Road Specifications

ROAD*	SURFACE TYPE	SURFACE WIDTH	LENGTH	MAXIMUM GRADE %	MINIMUM GRADE %	AVERAGE GRADE %
D	Gravel or Road Base	20'-60'	0.1 miles	10	0	5
F	Gravel or pavement	15'-35'	0.05 miles	5	0	2.5
G'	Dirt & Gravel	10-12'	0.4 miles	14.6	0	4.7
H	Dirt & Gravel	12-24'	0.6 miles	12.24	0.83	3.8
K	Dirt & Gravel	12-24'	0.05 miles	22.6	11.5	17.3
L	Gravel or Road Base	15-30'	0.11 miles	6.2	0	4.4
M	Dirt & Gravel	10-24'	0.05 miles	10.9	0	8.5
P (Haul Road)	Dirt & Gravel	12-30'	0.09miles	10.88	0	4.6

Table 742a

Diversion Ditch Peak Flow Design Data

Ditch No.	Acreage	Area (mi²)	CCN	S' (in.)	Basin Length, L (ft)	Basin Average Grade (%)	Lag Time, t_L (hr)	Overall Storm Precip., P (in.)	Overall Storm Runoff, R (in.)	Time of Concentration, t_c (hr)	U.H. Time to Peak, t_p (hr)	Peak Flow, Q_p (cfs)	
												10yr-24hr	100yr-6hr
6B	7.6	0.0119	75	3.26	1,780	36	0.10	2.1	0.44	0.16	0.11	5.71	-
6C	13.9	0.0218	75	3.28	2,703	38	0.13	2.1	0.44	0.22	0.15	9.08	-
7E	4.3	0.0068	81	2.41	1,241	18	0.09	2.1	0.65	0.15	0.10	3.52	-
7G	7.6	0.0119	78	2.82	1,644	9	0.17	2.0	0.48	0.28	0.19	-	3.94
7H	1.7	0.0027	76	3.09	663	19	0.06	2.0	0.43	0.10	0.07	-	5.09
8	13.1	0.0204	70	4.29	1,698	12	0.19	2.0	0.24	0.31	0.21	-	2.45
14	221.8	0.3465	75	3.32	8,241	24	0.41	2.1	0.43	0.68	0.45	56.48	-
15A	1.7	0.0026	88	1.36	485	13	0.04	2.1	1.05	0.06	0.04	2.21	-
15B	0.3	0.0004	87	1.53	200	14	0.02	2.1	0.97	0.03	0.02	2.48	-
15Ba	1.5	0.0023	88	1.36	300	12	0.03	2.1	1.05	0.04	0.03	2.5	-
16A	0.6	0.0010	84	1.90	778	7	0.09	2.0	0.74	0.14	0.10	-	0.75
16B	0.7	0.0011	82	2.14	576	12	0.05	2.0	0.67	0.09	0.06	-	1.74
16Ba	0.9	0.0015	75	3.42	258	15	0.03	2.0	0.37	0.05	0.04	-	0.46
16C	0.5	0.0007	86	1.57	386	10	0.04	2.0	0.87	0.06	0.04	-	2.3
16D	2.6	0.0040	75	3.42	723	9	0.10	2.0	0.37	0.16	0.11	-	3.38
16E	2.5	0.0039	71	4.08	589	16	0.07	2.0	0.27	0.11	0.08	-	0.63
16Ea	3.4	0.0054	70	4.29	744	10	0.11	2.0	0.24	0.18	0.12	-	0.72
16F	3.1	0.0049	73	3.70	713	17	0.07	2.0	0.32	0.12	0.08	-	5.12
32	0.5	0.0008	70	4.29	158	23	0.02	2.0	0.24	0.03	0.02	-	0.11
33	0.3	0.0005	70	4.29	115	22	0.02	2.0	0.24	0.03	0.02	-	0.07
72A	1.3	0.0020	90	1.11	924	12	0.06	2.1	1.18	0.10	0.07	4.59	-
72B	0.2	0.0002	90	1.15	246	8	0.03	2.1	1.16	0.04	0.03	4.65	-
72C	0.2	0.0002	90	1.12	238	5	0.03	2.1	1.17	0.05	0.04	4.68	-
74A	1.6	0.0025	89	1.25	791	12	0.08	2.1	1.10	0.09	0.06	2.25	-
74Ab	1.0	0.0016	89	1.24	150	10	0.02	2.1	1.11	0.03	0.02	1.5	-
76	1.1	0.0018	70	4.29	518	22	0.05	2.0	0.24	0.09	0.06	-	0.24
77	1.2	0.0019	76	3.25	904	8	0.12	2.1	0.45	0.20	0.13	0.55	-
80A	3.8	0.0059	75	3.26	832	13	0.09	2.1	0.44	0.15	0.10	11.01	-
80B	0.3	0.0004	90	1.10	163	12	0.02	2.1	1.19	0.03	0.02	11.39	-
80C	0.7	0.0011	90	1.11	279	9	0.03	2.1	1.18	0.04	0.03	12.43	-
80D	2.3	0.0036	75	3.26	803	12	0.09	2.1	0.44	0.15	0.10	0.86	-
81	2.9	0.0046	72	3.97	860	14	0.10	2.1	0.28	0.16	0.11	-	4.53
82A	0.2	0.0003	90	1.10	236	15	0.02	2.1	1.19	0.03	0.02	0.28	-
82B	0.9	0.0014	90	1.10	495	16	0.03	2.1	1.19	0.05	0.04	1.33	-

Table 742b

Culvert Peak Flow Design Data

Culvert	Drainage Acreage	Drainage Area (mi^2)	CCN	S' (in.)	Basin Length, L (ft)	Basin Average Grade (%)	Lag Time, t_L (hr)	Overall Storm Precip., P (in.)	Overall Storm Runoff, R (in.)	Time of Concentration, t_c (hr)	U.H. Time to Peak, t_p (hr)	Design Peak Flow, Q_p (cfs)
81	14.4	0.0225	70	4.29	1,134	2.6	0.29	2.0	0.24	0.49	0.32	2.30
82	7.1	0.0111	71	4.08	1,176	11	0.14	2.0	0.27	0.24	0.16	1.60
15A	Used calculated flows for Ditch 15A											2.21
15B	Used calculated flows for Ditch 15B											2.48
16A	Used calculated flows for Ditch 16A											0.75
16Ba	Used calculated flows for Ditch 16Ba											0.46
16F	Used calculated flows for Ditch 16F											5.10
16G	Used 75% of calculated flows for Ditch 16F due to alt sed controls											3.83
33A	Used combined calculated flows for Ditch 8 and Ditch 33											2.45
33B	Used calculated flows for Ditch 8											2.45
74B	Used calculated flows for Ditch 74A											2.25
7E	Used calculated flows for Ditch 7H											5.09
7F	Used calculated flows for Ditch 7G											3.94
80A	Used calculated flows for Ditch 7E											3.52
80B	Used calculated flows for Ditch 80B											11.39
8A	Used calculated flows for Ditch 8											2.45

Table 742c
Diversion Ditch Design Criteria

Ditch No.	Design Flow Rate, Q (cfs)	Manning's Roughness, n	Bottom Width, b (ft)	Side Slope, m (m:1 = H:V)	Minimum Slope Conditions						Maximum Slope Conditions						Current Depth (ft)	Available Freeboard (in.)	Lining Required?	Minimum Needed Rip Rap D_{50} (ft)
					Slope, S_o	Area, A (ft^2)	Wetted Perimeter, P_w (ft)	Hydraulic Radius, R_h (ft)	Velocity, v (fps)	Depth, y_n (ft)	Slope, S_o	Depth, y_n (ft)	Area, A (ft^2)	Wetted Perimeter, P_w (ft)	Hydraulic Radius, R_h (ft)	Velocity, v (fps)				
6B	5.7	0.03	2.5	1.3	0.016	1.61	4.17	0.39	3.52	0.51	0.059	0.36	1.08	3.69	0.29	5.29	1.50	11.9	**YES**	0.25
6C	9.1	0.03	2.5	2	0.010	2.90	5.77	0.50	3.13	0.73	0.020	0.61	2.26	5.22	0.43	4.01	1.50	9.2	NO	-
7E	3.5	0.03	2.7	0	0.040	0.87	3.34	0.26	4.03	0.32	0.143	0.21	0.58	3.13	1.00	18.73	1.00	8.1	**YES**	Variance[3]
7G	3.9	0.03	0	2	0.010	1.48	3.85	0.39	2.62	0.86	0.010	0.86	1.48	3.85	0.39	2.62	1.50	7.7	NO	-
7H	5.1	0.03	3	2	0.067	1.03	4.29	0.24	4.95	0.29	0.200	0.21	0.71	3.93	0.18	7.10	0.75	5.5	**YES**	0.5
8	2.5	0.03	0.1	5.3	0.080	0.59	3.61	0.16	4.20	0.33	0.120	0.30	0.51	3.35	0.15	4.90	0.80	5.7	NO	-
14	56.5	0.023	(half-round CMP D = 54")		0.053	4.37	5.40	0.81	12.92	1.44	0.260	0.96	2.48	4.32	0.57	22.76	2.25	9.6	**YES**	concrete slopes >10%
15A[1]	2.2	0.03	0	2	0.11	0.99	1.98	0.20	5.58	0.44	0.130	0.43	0.37	1.92	0.19	5.95	0.75	9.7	**YES**	0.5 if slope >8%
15B	2.5	0.03	0	2	0.1	0.45	2.12	0.21	5.56	0.47	0.100	0.47	0.45	2.12	0.21	5.56	0.75	9.3	**YES**	0.5 If slope >10%
15Ba	2.5	0.03	0	1.5	0.015	0.16	1.26	0.15	1.68	0.35	0.050	0.25	0.09	0.90	0.10	2.45	0.75	4.8	NO	-
16A	0.8	0.03	0.1	4	0.04	0.31	2.29	0.13	2.60	0.27	0.060	0.24	0.26	2.11	0.12	3.02	0.80	6.4	NO	-
16B	1.7	0.03	0.1	4	0.040	0.54	3.04	0.18	3.14	0.36	0.030	0.36	0.60	3.19	0.19	2.82	0.80	5.3	NO	-
16Ba	0.5	0.03	1	2	0.040	0.21	1.70	0.12	2.43	0.16	0.100	0.12	0.15	1.54	0.10	3.32	0.75	7.1	NO	-
16C	2.3	0.03	0.1	4	0.040	0.68	3.39	0.20	3.38	0.40	0.060	0.37	0.58	3.15	0.19	3.95	0.80	4.8	NO	-
16D	3.4	0.03	0.1	4	0.040	0.91	3.93	0.23	3.73	0.46	0.060	0.43	0.78	3.64	0.21	4.34	0.80	4.0	NO	-
16E	0.6	0.03	0.1	4	0.073	2.51	6.53	0.38	7.08	0.78	0.011	0.22	0.21	1.91	0.11	1.21	0.80	0.2	NO	-
16Ea	0.7	0.03	1	2	0.040	0.26	1.84	0.14	2.66	0.19	0.100	0.15	0.19	1.65	0.11	3.69	0.75	6.7	NO	-
16F	5.1	0.03	0.1	4	0.040	1.23	4.56	0.27	4.13	0.54	0.060	0.50	1.06	4.24	0.25	4.81	0.80	3.1	NO	0
18A	1.6	0.03	0	1.5	0.003	1.16	3.17	0.37	1.39	0.88	0.019	0.62	0.58	2.24	0.26	2.77	1.40	6.2	NO	
18B	0.3	0.03	0	1.5	0.005	0.26	1.55	0.18	1.11	0.43	0.005	0.43	0.28	1.55	0.18	1.11	1.00	6.8	NO	
18C	2.1	0.03	0	1.5	0.038	0.54	2.16	0.25	3.83	0.60	0.050	0.57	0.49	2.06	0.24	4.24	1.10	6.0	NO	
18D	2.2	0.03	3	1.5	0.022	0.84	3.90	0.22	2.65	0.25	0.085	0.17	0.55	3.61	0.15	4.13	0.80	6.6	NO	
18E	2.2	0.03	3	1.5	0.050	0.62	3.69	0.17	3.39	0.19	0.120	0.15	0.48	3.54	0.14	4.55	1.00	9.7	NO	
32	0.1	0.03	0.6	2.6	0.100	0.60	2.72	0.22	5.74	0.38	0.100	0.06	0.05	0.95	0.05	2.12	0.60	2.6	NO	-
33	0.1	0.03	0.6	6.7	0.060	0.05	1.92	0.04	1.38	0.05	0.060	0.05	0.05	1.92	0.04	1.38	0.60	6.6	NO	-
72A	4.6	0.038	3	2	0.060	1.16	4.43	0.26	3.93	0.32	0.290	0.20	0.69	3.90	0.18	6.62	1.40	13.0	**YES**	0.5 if slope >10%
72B	4.7	0.035	2	2	0.125	0.81	3.38	0.24	5.78	0.31	0.125	0.31	0.81	3.38	0.24	5.78	1.50	14.3	**YES**	0.5 If slope >10%
72C	4.7	0.035	2	2	0.065	1.02	3.66	0.28	4.61	0.37	0.065	0.37	1.02	3.66	0.28	4.61	1.50	13.5	NO	-
74A	2.3	0.03	0	2	0.090	0.44	2.09	0.21	5.24	0.47	0.080	0.47	0.44	2.09	0.21	5.24	0.60	1.6	**YES**	0.5
74Ab	1.5	0.03	0	4	0.030	0.64	3.30	0.19	2.68	0.40	0.060	0.20	0.16	1.65	0.10	2.56	0.80	4.8	NO	-
76	0.2	0.03	0.1	6.3	0.120	0.09	1.54	0.06	2.62	0.11	0.120	0.11	0.09	1.54	0.06	2.62	0.63	6.2	NO	-
77[2]	0.6	0.03	0.1	4	0.060	-	-	-	-	0.31	0.080	0.32	0.29	1.95	0.15	4.10	1.00	8.3	NO	-
80A	11.0	0.038	6	2	0.050	2.59	7.71	0.34	4.23	0.38	0.065	0.35	2.37	7.58	0.31	4.60	1.00	7.4	NO	0.5 if slope >7%
80B	11.4	0.03	10	10	0.010	5.19	17.58	0.30	2.20	0.377	0.010	0.38	5.19	17.58	0.30	2.20	1.00	7.5	NO	0.5 If slope >5%
80C	12.4	0.042	10	2	0.240	2.12	10.91	0.19	5.82	0.204	0.240	0.20	2.12	10.91	0.19	5.82	1.00	9.6	**YES**	0.5
80D	0.9	0.03	1	1	0.026	0.59	2.17	0.27	3.33	0.414	0.026	0.41	0.59	2.17	0.27	3.33	1.00	7.0	NO	-
82A	0.2	0.03	0	2	0.005	0.11	1.05	0.11	0.78	0.235	0.016	0.19	0.07	0.85	0.08	1.21	0.75	6.2	NO	-
82B	1.3	0.03	0	2	0.002	0.64	2.52	0.25	0.77	0.564	0.090	0.28	0.15	1.23	0.12	3.68	1.00	5.2	NO	-

[1] Ditch geometry assumed the same as for Ditch 15B.
[2] Channel geometry varies. Some values taken from CPMC permit. However, peak flows have now decreased, making the design conservative.
[3] Variance was granted since channel had already eroded down to bedrock.

Table 742d

Culvert Design Criteria

Orifice Coefficients C = 0.49804 (projecting inlet, from nomograph)
C = 0.555 (mitered inlet, from nomograph)

Culvert No.	Design Flow, Q (cfs)	Manning's Roughness, n[3]	Slope, S_o	Diameter, D (in.)	Length, L (ft)	Area, A $(ft)^2$	Hydraulic Radius, R_h $(ft)^2$	Available HW/D Ratio	Available HW (ft)	Flow Capacity (cfs) Pipe Flow[2]	Flow Capacity (cfs) Inlet Control	Avg Velocity, V (ft/s)[1]	Comments
81	2.30	0.013	0.200	27	200	3.98	6.75	2.2	5.00	138.50	31.28	13.04	Projecting steel inlet/outlet
82	1.60	0.013	0.034	27	42	3.98	6.75	2.3	5.23	57.10	32.18	6.29	Projecting steel inlet/outlet
15A	2.21	0.013	0.105	14	82	1.07	3.50	2.1	2.48	17.41	5.89	11.16	Projecting steel inlet/outlet; D50 < 0.5 ft - monitor for erosion.
15B	2.48	0.024	0.088	15	80	1.23	3.75	2.1	2.63	10.34	6.94	6.94	Projecting inlet/outlet
16A	0.75	0.024	0.098	18	180	1.77	4.50	1.6	2.45	17.81	9.21	4.99	Projecting inlet/outlet
16Ba	0.46	0.024	0.010	30	17	4.91	7.50	1.0	2.50	22.22	21.93	1.81	Projecting inlet/outlet
16F	5.10	0.024	0.066	18	130	1.77	4.50	2.5	3.80	14.61	12.33	7.53	Projecting inlet/outlet
16G	3.83	0.024	0.450	18	150	1.77	4.50	2.7	4.00	20+	12.73	10+	Projecting outlet discharges into rock rubble
33A	2.45	0.024	0.187	24	41	3.14	6.00	1.6	3.10	53.00	20.28	8.58	Mitered inlet; monitor outlet for erosion.
33B	2.45	0.024	0.020	24	40	3.14	6.00	2.7	5.45	17.33	26.49	3.90	Projecting inlet/outlet
74B	2.25	0.024	0.031	24	400	3.14	6.00	3.3	6.50	21.57	29.45	4.44	Projecting inlet; D50 < 0.5 ft - monitor outlet for erosion.
7E	5.09	0.024	0.068	24	40	3.14	6.00	3.1	6.10	31.95	28.36	7.44	Projecting inlet; rocks placed in Pond 5.
7F	3.94	0.024	0.190	12	480	0.79	3.00	1.5	1.50	8.41	3.14	10.53	Projecting inlet; D50 = 1.5 ft.
80A	3.52	0.013	0.250	24	67	3.14	6.00	2.1	4.10	113.11	22.11	16.29	Projecting steel inlet/outlet; D50 = 1.5 ft.
80B	11.39	0.013	0.220	30	55	4.91	7.50	2.2	5.50	192.39	40.45	21.26	Projecting steel inlet/outlet; D50 = 1.5 ft.
8A	2.45	0.024	0.320	24	60	3.14	6.00	4.4	8.70	69.32	36.83	10.36	Mitered inlet; D50 < 0.5 ft - monitor outlet for erosion.
18C	2.20	0.024	0.405 (5)	12	160	0.79	3.00	1.3	1.30	24.4 (7)	3.13	9.80	Projecting inlet/Outlet to DSO=0.5 ft
18D	0.91	0.024	0.065	15	20	1.23	3.75	1.0	1.25	8.90	4.32	4.80	Projecting inlet/Outlet Vel <5.0 fps
18E	0.79	0.024	0.070	12	20	0.79	3.00	1.7	1.70	5.10	3.83	4.70	Projecting inlet/Outlet Vel <5.0 fps

NOTE: All culverts made of corrugated metal pipe (CMP) unless otherwise indicated as steel.

[1] If pipe flow not adequate to convey design flow, then inlet control assumed. Average velocity based on design flow.
[2] Full flow conditions assumed.
[3] Manning's roughness, n, assumed 0.024 and 0.013 for corrugated metal pipe (CMP) and steel pipe respectively.

recommended gradation for both mild and steep channel conditions. In some cases, concrete grout lining was used in riprapped sections to increase channel stability and/or reduce riprap size and/or eliminate the need for riprap altogether.

TABLE 742.312a
Recommended Riprap Gradation Limits

Design Ratio	Steep Slope	Mild Slope
D_{max}/D_{50}	1.25	2
D_{50}/D_{10-20}	2-3	2-3

From "Surface Mining Water Diversion Design Manual", 1982

Conveyor Lining

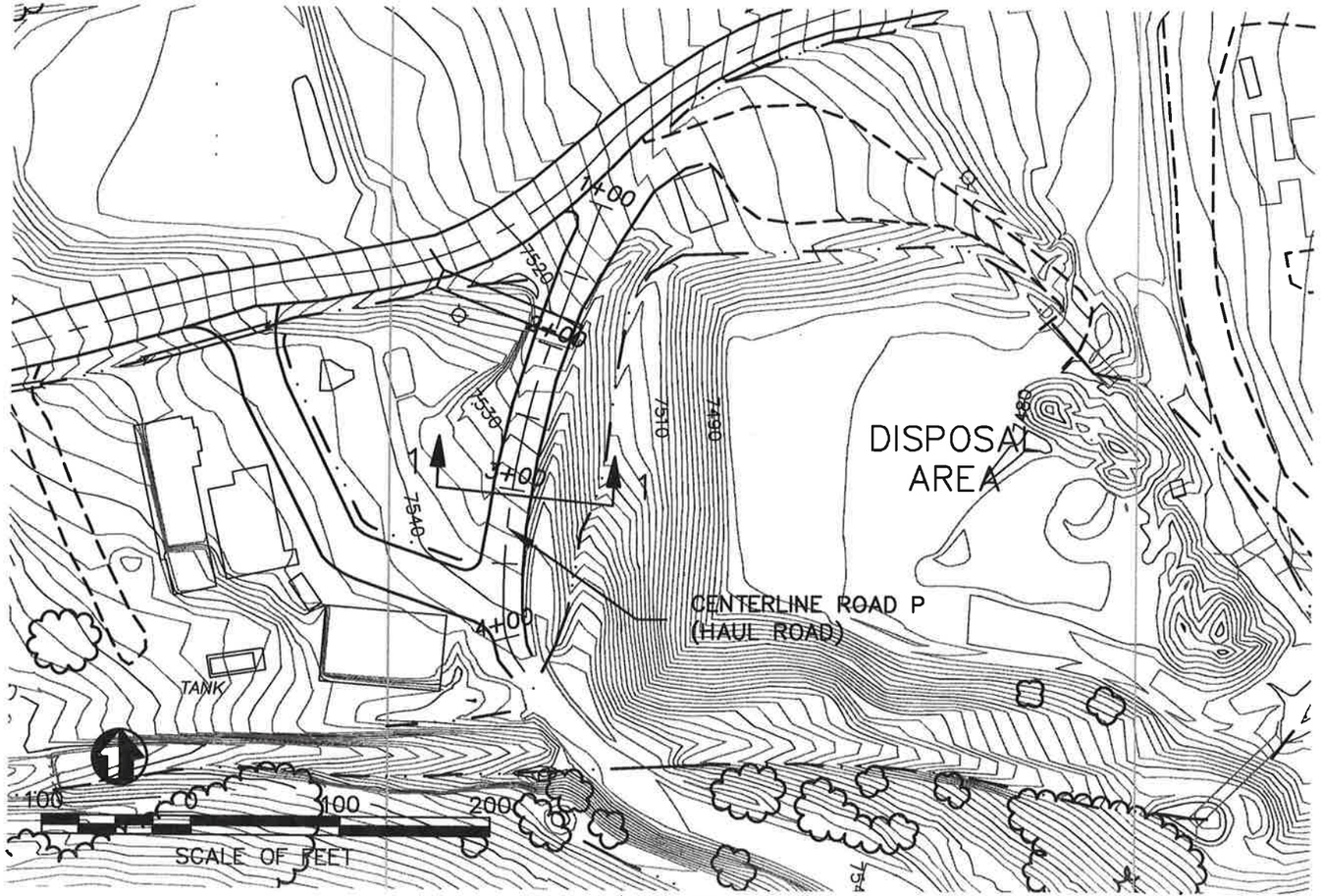
A second type of channel lining utilized consists of overlapped conveyor belt material. This lining was installed in excavated channels in short pieces so that the upstream belt material overlapped the downstream piece thereby preventing water from washing beneath the downstream liner. Each section of channel lining was secured with wire and rebar anchors. The locations of lined channel sections are shown on Maps 731.720a through 731.720b.

Half Round CMP Pipe

In other locations such as around Pond 6, half round CMP pipe has been placed to provide the required erosion protection. CMP pipe has also been used in steep areas where channel flow is infeasible but yet the water must be conveyed down a hillside.

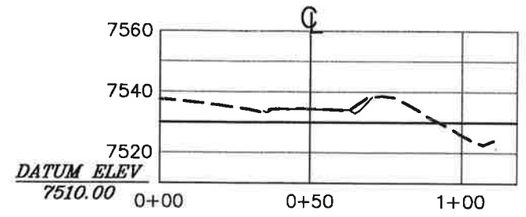
Ditch sections requiring erosion protection are shown on Maps 731.720a through 731.720b. Areas downstream from culvert installations requiring similar protection are shown on Maps 731.720a and 731.720b. Specific mention should be made with regard to the design of erosion protection at some of the locations shown on the maps. Current riprap design methodologies do not allow for the design of erosion protection on extremely steep slopes using such materials as rock riprap. In some locations, however, such as at Culverts 57A through 60A (as well as at other locations within the mine permit area), consideration must be given to the fact that local drainage must be transferred down a steep hillside or stream channel. At such locations, procedures are not available for designing riprap erosion protection and, therefore, calculations under such conditions have not been, nor can they be made.

An effort has been made by SCA to reduce or eliminate the potential for serious erosion at these locations by placing culvert exits onto existing or man-made rock rubble piles, or onto rock ledges which act as energy dissipation devices and effectively reduce downstream erosion. SCA will continue to monitor culvert outfalls at these locations and thereby determine the efficiency of the rock rubble piles and what additional action, if any, should or can be taken.



ROAD P (HAUL ROAD) PLAN

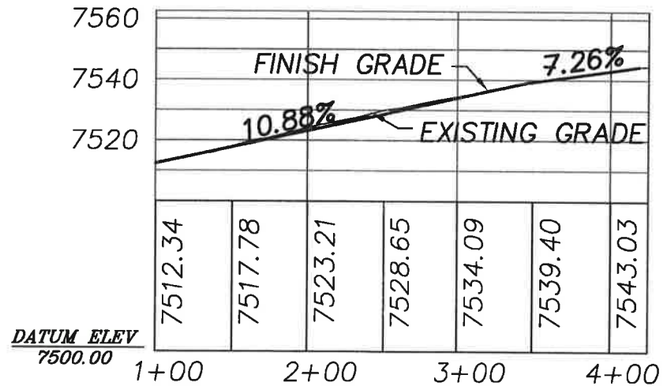
SCALE: HORIZ: 1" = 100'



TYPICAL CROSS SECTION 1–1

SECTION ROAD P (HAUL ROAD)

SCALE: HORIZ: 1" = 50' VERT: 1" = 50'



PROFILE P (HAUL ROAD)

SCALE: HORIZ: 1" = 100' VERT: 1" = 50'

INCORPORATED

JAN 12 2015

Div. of Oil, Gas & Mining

NOTE:
MAINTAIN EXISTING SURFACES OF ROAD P (HAUL ROAD) CONSISTING OF INTERMITTANT PAVEMENT AND GRAVEL SURFACES.

SCA / STAR POINT WASTE FUEL
ROAD P (HAUL ROAD)
PLAN AND PROFILE

TWIN PEAKS
Engineering & Land Surveying
2264 NORTH 1450 EAST LEHI, UTAH 84043
(801) 450-3511, (801) 439-0700 FAX

534.100e

SCA / STAR POINT WASTE FUEL
REFUSE PILE SURFACE WATER
DRAINAGES AND DIVERSIONS

SUBSOIL PILE

UPDES PERMIT #UTG040025 OUTFALL #009

POND 9

AREA PREVIOUSLY RECLAIMED BY CPMC (FINAL BOND RELEASE GRANTED IN 2013)

REFUSE PILE B

REFUSE PILE C

POND 6

RIPRAP ENERGY DISSIPATION BASIN

UPDES PERMIT #UTG040025 OUTFALL #006

REFUSE PILE A

POND 5

UPDES PERMIT #UTG040025 OUTFALL #005

AREA PREVIOUSLY RECLAIMED BY CPMC (FINAL BOND RELEASE 2013)

PERMIT BOUNDARY

200 0 200 400
SCALE OF FEET

LEGEND

- PRIMARY ROAD
- SECONDARY ROAD/TRAIL
- BRIDGE, CULVERT
- RAILROAD
- BUILDINGS, STRUCTURES
- LAKE, POND
- RIVER, STREAM
- CONTOURS (600, 650)
- SECTION CORNER (13 | 14 / 22 | 23)
- 49 — UNLINED DITCH SECTION AND DITCH NUMBER
- 6A — LINED DITCH SECTION AND DITCH NUMBER
- 46B — CULVERT AND CULVERT NUMBER
- SC — ALTERNATE SEDIMENT CONTROLS
- PERMIT BOUNDARY
- WATERSHED BOUNDARIES
- DISTURBED AREA BOUNDARY
- DITCHES
- TOPSOIL LIMITS OF DISTURBANCE

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DWG DATE: SEPT 2014

PLOT DATE: 12 November 2014

SHEET

200 0 200 400
SCALE OF FEET

UPDES PERMIT
#UTG040025
OUTFALL #009

AREA PREVIOUSLY RECLAIMED BY CPMC (FINAL BOND RELEASE GRANTED IN 2013)

POND 9

POND 6

POND 5

REFUSE PILE A

REFUSE PILE B

REFUSE PILE C

SUBSOIL PILE

CULVERT DISCHARGES INTO EXISTING CHANNEL AND ROCK RUBBLE PILE

NO DOWNSTREAM LINING REQUIRED

RIPRAP ENERGY DISSIPATION BASIN

UPDES PERMIT
#UTG040025
OUTFALL #006

AREA PREVIOUSLY RECLAIMED BY CPMC (FINAL BOND RELEASE GRANTED IN 2013)

UPDES PERMIT
#UTG040025
OUTFALL #008

CULVERT DISCHARGES ONTO EXISTING ROCK RUBBLE PILE

PERMIT BOUNDARY

LEGEND

- PRIMARY ROAD
- SECONDARY ROAD/TRAIL
- BRIDGE, CULVERT
- RAILROAD
- BUILDINGS, STRUCTURES
- LAKE, POND
- RIVER, STREAM
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DWG DATE: MAY 2014
PLOT DATE: 17 November

SHEET

731.720b