

C/015/0025 Incoming

**J. E. STOVER & ASSOCIATES, INC.**

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#3720  
R

MINE ENGINEERING  
MINE RECLAMATION

CIVIL ENGINEERING  
CONST. MANAGEMENT

**COPY**

February 11, 2011

Mr. James Smith  
Utah Coal Regulatory Program  
1594 West North Temple, Suite 1210  
Salt Lake City, Utah 84114-5801

Re: Castle Valley Mining LLC  
Castle Valley Mines  
Conditional Approval, Abatement of NOV#10068  
Permit No. C/015/0025

Dear Mr. Smith:

The Division of Oil & Gas and Mining's (DOGM) letter dated January 25, 2011 requested eight clean copies of the above listed amendment. On behalf of Castle Valley Mining, LLC, eight copies of the amended data are provided and detailed on DOGM form C2.

Please feel free to call me if you have any questions.

Sincerely,

  
J. E. Stover, P.E.  
Consulting Engineer

File in:  
 Confidential  
 Shelf  
 Expandable  
Date Folder 02/15/2011 C/015/0025  
See: Stover For additional

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**FEB 15 2011**  
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# APPLICATION FOR COAL PERMIT PROCESSING Detailed Schedule Of Changes to the Mining And Reclamation Plan

COPY

**Permittee:** Castle Valley Mining LLC  
**Mine:** Castle Valley Mines **Permit Number:** C/015/0025  
**Title:** NOV-10068 Abatement

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

<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 7-113, Updated Table 7-24 with new ditch data for Ditch D-8D</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 7-119, Added new culvert C-14D</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 7-136, Revised text regarding Ditch D-8D-Water Bar</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 7-138 Water Bar Never Constructed, page will read 'Page Intentionally Left Blank'</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 7G-51, Added Culvert C-14 Design Information, and updated Table with Culvert C-13D</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 7G-52, Added SedCad as program used to size culvert</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 7G-108, Added design information for Ditch D-8D, Remove text regarding Water Bar</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 7G-129, Remove Water Bar design,replace SedCad design for Ditch D-8D (Concrete)</u>
<input checked="" type="checkbox"/> Add	<input type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 7G-107A, Add design for new Culvert C-14D</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 5A-2, Added new Valve Box to Table 5A-1, Existing Structures</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 5A-10, Added Structure #29, Culinary Water System Valve Box with short description</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Plate 5-2B, Added Concrete Lining on Ditch D-8D, Removed Water Bar, changed haul rd. color</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Plate 5-2C, Added Valve Box, changed haul rd. color, added culinary water, fuel line to legend</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Plate 7-1C, Added Valve Box, changed haul rd. color</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Plate 7-1B, Added C-14D, Concrete lined portion of D-8D. Removed Water Bar, haul rd. color</u>
<input type="checkbox"/> Add	<input type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Plate 7-3, Added C-14D, Removed Grouted inlet text, changed haul rd.color</u>
<input type="checkbox"/> Add	<input type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Plate 7-5, Added C-14D, Concrete Lining on D-8D, Valve Box. Removed Water Bar, HR color</u>
<input type="checkbox"/> Add	<input checked="" type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>Page 8-12, included reclamation estimate for concrete apron and concrete valve box, removed</u>
<input type="checkbox"/> Add	<input type="checkbox"/> Replace	<input type="checkbox"/> Remove	<u>text regarding reclamation in 2012</u>
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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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Table 7-24 Summary of Diversion Ditch Calculations

Ditch	Bottom Width (Ft)	Top Width (Ft)	Depth (Ft)	Type Side Slope H:V	Measured Slope %	Contributing Watershed	REQ'D Av. Rip-Rap Size (In.)
D-1D	0	1.33	0.67	1:1	2 Min 11 Max	AD-3A	Soil
D-2D	0	1.33	0.67	1:1	6 Min 20 Max	AD-3A, AD-5	Bedrock
D-3D						Replaced with C-5D	
D-4D	0	2	1	1:1	2Min 6Av. 17 Max	AD- 14	Soil Soil D <sub>50</sub> = 6"
D-5D						Replaced with C-5D	
D-6D	0	3	1.5	1:1	2 Min 4 Max	AD-3A, AD-5 AD-7, AD-9, AD-10 AD-12, AD-14	Soil
D-7D	2	3.5	0.75	1.5:1	2 Min 6 Av. 55 Max	AD-1A, AD-1B, AD-2A AD-2B, AD-2C, AD-3B AD-4, AD-6, AD-8	Soil Soil D <sub>50</sub> = 6"
D-8D	0	2	1	1:1	2 Min 7 Max	AD-13	Soil
D-8D Concrete	1.5	2.5	0.5	1:1	2	AD-13	Soil
D-8D Water Bar	Water Bar Not Installed						
D-9D	0	2	1	1:1	4 Min 10	AD-15	Soil
D-10D	1	3.33	0.67	1.5:1	7 Min 50	AD-6, AD-3B, (part) AD-2B, AD-2C	D <sub>50</sub> = 4" Bedrock
D-11D	0	1	0.5	1:1	41 Min Near Vert.	Tipple Wash Hose	Grouted Rip-Rap
D-12D	0	1	0.5	1:1	81 Av.	Tipple Wash Hose	Soil
D-13D Water Shed	0	6	0.5	10:1 2:1	0.5 Av.	AD-6 Partial	Soil
D-14D	0	1.33	0.67	1.5:1	0.06Av.	AU-4A	Soil
D-15D	0	2.00	1.00	1:1	0.05 Av.	AD-16	Soil
D-16D	0	1.50	1.75	1:1	0.05 Av.	AD-18	Soil
D-17D	0	.96	1	1:1	0.08 Av.	AU-23, AD-20	Soil

Notes:

1. Dimensions given indicate minimum requirements. Actual dimensions may vary. Minimum required cross-sections will be maintained.
2. The use of lined drainage ditches is required when flow velocities exceed approximately 5 feet per second. Rip-rap may be installed where not required.

Table 7-25 Culvert Characteristics (Cont)

Culvert	Diameter (in.)	Type	Contributing Watersheds	Slope (ft/ft)	Outlet Condition
C-1D	15	CMP flexible	AD-6, AD-3B	1.00	24" rip-rap
C-2D	15	CMP, RCP flexible	AD-2B, AD-2C, AD 3B AD-4, AD-6	4.0	10" rip-rap
C-3D	20	slt pipe	AD-3A	0.03	4" rip-rap
C-4D	21	CMP	AD-3A, AD-5, AD-7, AD-14, C-1OD	0.18	9" rip-rap
C-5D	18	CMP	AD-34, AD-5, AD-7, AD-9	0.07	3" rip-rap
C-6D	12	CMP	AD-b	0.48	9" rip-rap
C-7D	18	CMP	Abandoned In Place		
C-8D			Replaced with C-SD		
C-9D	18	CMP	See C-8D	0.05	3" rip-rap
C-10D	18	CMP	Tipple Wash Hose	0.03	Soil
C-11D	12	CMP flexible	AD-4A	0.05 0.25	3" rip-rap
C-12D	8	CMP	AD-18	0.05	Soil
C-13D	12	CMP	AU-23, AD-20	0.07	Soil
C-14D	18	CMP	AD-13	.02	Soil

coal storage pad, will be regraded to allow the drainage to flow into ditch D-7D below the fans shown on Plate 2-4C. At this point, the storage pad is level with D-7D, allowing drainage to easily flow into the ditch. The berm around the coal storage pad will prevent drainage over the edge of the pad and direct the flow toward ditch D-7D. The point at which the storage pad intersects D-7D is outside of the angle of repose of the coal pile, and the ditch will not be plugged by coal spillage. A catch basin exists just below this point which will trap any coal fines which may be washed into the drainage, protecting ditch D-7D below this point.

#### Ditch D-8D Water Bar

During October of 2010 as part of a response to NOV-10068, it was discovered that the Ditch D-8D water bar was never constructed, and therefore, references to it on applicable Plates and Permit text have been removed.

#### Culvert C-40U

A trash and a debris clean out basin will be placed at the entrance to culvert C-40U. Additionally while constructing the Tank Seam Portal C.W. Mining will investigate other methods that can be incorporated to reduce the possible culvert C-40U becoming plugged by debris.

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Culvert Characteristics (cont'd)

Culvert	Diameter (in.)	Type	Contributing Watersheds	Peak Q (cfs)	Slope (ft/ft)	Outlet Condition
C-1D	15	CMP flexible	AD-6, AD-3B	0.93	1.00	24" rip-rap
C-2D	15	CMP, RCP flexible	AD-2B, AD-2C, AD 3B AD-4, AD-6	1.47	4.0	10" rip-rap
C-3D	20	slt pipe	AD-3A	0.23	0.03	4" rip-rap
C-4D	21	CMP	AD-3A, AD-5, AD-7, AD-14, C-10D	2.66	0.18	9" rip-rap
C-5D	18	CMP	AD-34, AD-5, AD-7, AD-9	0.23	0.07	3" rip-rap
C-6D	12	CMP	AD-b	0.62	0.48	9" rip-rap
C-7D	18	CMP		Abandoned In Place		
C-8D				Replaced with C-5D		
C-9D	18	CMP	See C-8D	2.36	0.05	3" rip-rap
C-10D	18	CMP	Tipple Wash Hose	0.25	0.03	Soil
C-11D	12	CMP flexible	AD-4A	.35	0.05 0.25	3" rip-rap
C-12D	8	CMP	AD-18	0.55	0.05	Soil
C-13D	12	CMP	AU-23, AD-20	0.99	0.07	Soil
C-14D	18	CMP	AD-13	1.23	.02	Soil

All culverts were evaluated for adequacy using Flowmaster (Haestad Methods, Inc.) or SedCad 4. The flow to culverts were taken as the summation of flows from each contributing watershed (not accounting for flow routing). Thus, assumed flows are conservatively high.

Assume —  $\eta = .024$  for CMP & flexible culverts

$\eta = .015$  for RCP & Steel pipe

Flowmaster and SedCad printouts are shown on the following pages.

All culverts are designed to pass the design flows without overtopping. Comparisons of outlet velocity with channel stability were made using the figure on page 53. The maximum permissible velocity corresponding to the appropriate channel slopes were used (1:1, 2:1 etc.).

Velocities of 5.0 ft/s and less were considered non-erosive.

Where riprap is to be placed at the culvert outlet, it should extend a minimum distance of 3D50 - 5D5 downstream from the culvert outlet. The required riprap for each culvert is shown in the tables on pg. 49-51.

### DITCH CHARACTERISTICS

DITCH	CHANNEL SLOPE %	CONTRIBUTING WATERSHED	PEAK Q(cfs)	BANK AND BOTTOM DESC.	MANNING 'S n <sup>(a)</sup>
D-1D	2 Min, 11 Max	AD-3A	0.23	Rocky Soil	0.03
D-2D	6 Min, 20 Max	AD-3A, AD-5	0.53	Rocky Soil, Bedrock	0.03
D-3D		Replaced with C-5D			
D-4D	2 Min, 7 Av 17 Max	AD-14	0.05	Soil	0.03
D-5D		Replaced with C-5D			
D-6D	2 Min, 4 Max	AD-3A, AD-5, AD-7 AD-9, AD-10, AD-12 AD-14	3.63	Rocky Soil	0.03
D-7D	2 Min, 6 Av 55 Max	AD-1A, AD-1B, AD-2A AD-2B, AD-2C, AD-3B AD-4, AD-6, AD-8	4.90	Soil D <sub>50</sub> = 3"	0.03 0.033
D-8D	2 Min, 7 Max	AD-13	1.23	Soil	0.03
D-8D Concrete	2 Min	AD-13	1.23	Concrete	.015
D-8D Water Bar	Water Bar Not Installed				
D-9D	4Min, 10 Max	AD-15	1.20	Soil	0.03
D-10D	7 Min, 50 Max	AD-6, AD-3B, AD-2C	1.03	D <sub>50</sub> = 4"	0.033
D-11D	41 Min Near Vertical Max	TIPPLE WASH HOSE	0.25	Grouted rip-rap	0.035
D-12D	81 Av.	TIPPLE WASH HOSE	0.25	Grouted	0.03
D-13D Water Bar	0.5 Av.	AD-6 Partial	0.23	Soil	0.03
D-14D	0.06 Av.	AU-4A	0.35	Soil	0.03
D-15D	0.05 Av.	AD-16	1.24	Soil	0.03
D-16D	0.05 Av.	AD-18	0.55	Soil	0.03
D-17D	0.08	AU-23,AD-20	0.99		

## Culvert C-14D

**Culvert Inputs:**

Length (ft)	Slope (%)	Manning's n	Max. Headwater (ft)	Tailwater (ft)	Entrance Loss Coef. (Ke)
50.00	2.00	0.0240	1.00	0.00	0.50

**Culvert Results:**

Minimum pipe diameter: 1 - 10 inch pipe(s) required

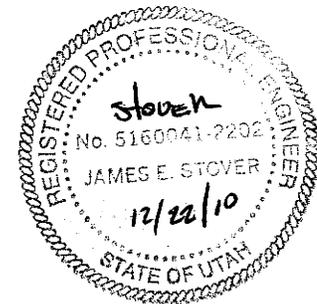
### ***Detailed Performance Curves***

Design Discharge = 1.23 cfs

Maximum Headwater = 1.00 ft

(BOLD indicates design pipe size)

Headwater (ft)	Discharge (cfs) (8 in)	Discharge (cfs) (10 in)	Discharge (cfs) (12 in)
0.10	0.39	<b>0.65</b>	0.28
0.20	0.41	<b>0.69</b>	0.29
0.30	0.44	<b>0.73</b>	0.35
0.40	0.47	<b>0.77</b>	0.53
0.50	0.49	<b>0.80</b>	0.74
0.60	0.64	<b>0.86</b>	0.97
0.70	0.82	<b>1.00</b>	1.19
0.80	0.92	<b>1.25</b>	1.42
0.90	0.95	<b>1.45</b>	1.76
1.00	0.99	<b>1.57</b>	2.10
1.10	1.02	<b>1.69</b>	2.43
1.20	1.05	<b>1.81</b>	2.67
1.30	1.09	<b>1.91</b>	2.90
1.40	1.12	<b>1.97</b>	2.99
1.50	1.15	<b>2.02</b>	3.09



## Ditch D-8D (Concrete Lined)

Material: Concrete

*Trapezoidal Channel*

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
1.50	1.0:1	1.0:1	2.0	0.0150	0.30		

	w/o Freeboard	w/ Freeboard
Design Discharge:	1.23 cfs	
Depth:	0.18 ft	0.48 ft
Top Width:	1.86 ft	2.46 ft
Velocity:	3.99 fps	
X-Section Area:	0.30 sq ft	
Hydraulic Radius:	0.151 ft	
Froude Number:	1.74	



## EXISTING STRUCTURES

Table 5A-1 lists each structure and construction dates.

Table 5A-1 Existing Structures  
Construction Dates

Existing Structure	Starting	Completion	Photo #
Sales/Receiving/Scale Office/Caretaker Dwelling	6/84	10/87	1
Fuel Tanks	10/83	6/84	2
Truck Loading Facility	9/82	4/83	3
Oil Slack Loading Facility	4/83	7/83	3
Storage & Stacking Facility	6/80	4/84	3
Conveyor Structures	3/80	6/80	3
Machine Shop	11/89	12/89	5
Shop	10/83	9/84	4
Coal Processing Facility	4/80	12/85	6
Lump Coal Facility	10/83	12/85	6
Non-Coal Storage Yard	3/80	9/84	7
WHR Tank Seam Fan	7/04/01	12/31/05	10
Powder Magazine	9/82	containerized	
Water Tanks & System	8/82	11/82	13
Lump Coal Storage Pad	8/92	10/92	15
Equipment Wash Pad	8/92	10/92	16
Shower House	5/93	7/94	17
Antifreeze Storage Tank	12/93	1/94	18
WHR Blind Canyon Seam Fan	7/4/01	12/31/05	19
Wild Horse Ridge Conveyor Belt	7/4/01	12/31/05	9
WHR Substation	7/4/01	12/31/05	12
WHR Fuel Tanks	7/4/01	12/31/05	14
WHR Coal Storage Bin	7/4/01	12/31/05	
Power Lines	7/4/01	12/31/05	
Water Lines	7/4/01	12/31/05	
Fuel Containment Enclosure	7/4/01	12/31/05	
Mine Portals	-	-	
CWS Valve Box	9/10	9/10	

regulations. The enclosure will be checked weekly and drained of standing water if needed. Details of the design, maintenance, and spill disposal can be found in the C.W. Mining SPCC plan.

28. Portals. The Bear Canyon #3 and #4 Mines, in Wild Horse Ridge, will have a total of six portals (Plate 3-4A and 3-4C), all located in Bear Canyon.

A Summary of the Portals are as follows:

	Existing
Blind Canyon Seam	3
Tank Seam -	<u>3</u>
Total	6

29. Culinary Water System Valve Box: An 8 ft. by 6 ft. concrete box constructed to enclose the control valves for the Culinary Water System. Location of the Box is shown on Plate 5-2C.

Ditch D-8D Concrete Apron (installed 9/2010)

Concrete Demolition

Volume = (20 ft) (4 ft) (0.5 ft) = (40 cu ft) / 27 = 1.5 cu yd

Cost = (\$ 12.78/cu yd) (1.5 cu yd) = \$ 20

Time = (1.5 cu yd) / (45 cu yd/day) = 0.03 days

02220-875-5550 (Concrete Disposal on Site) 002315-400-1300 (3 CY loader) 02320-200-0320  
(16 ton truck)

Volume = (1.5 cu yd) (1.3 swell factor) = 2.0 cu yd

Cost = (\$ 10.69/cu yd) (2.0 cu yd) = \$ 21.4

Time = (2.0 cu yd) / (232 cu yd/day) = 0.009 days

Cost Subtotal \$ 41.4

Time Subtotal .039 days Ditch Flow Meter Box (installed 9/2010)

Concrete Demolition

Volume Concrete Walls = {(8 ft) (6.2 ft) (.67 ft)} \* 4 = (133 cu ft) / 27 = 4.9 cu yd

Volume Concrete Floor & Ceiling = {(8.2)(6.2)(.67)}\*2 = (68 cu ft)/27 = 2.5 cu yd

Total Concrete Volume: 7.4 cu yd

Cost = (\$ 12.78/cu yd) (7.4 cu yd) = \$ 95.2

Time = (7.4 cu yd) / (45 cu yd/day) = 0.16 days

02220-875-5550 (Concrete Disposal on Site) 002315-400-1300 (3 CY loader) 02320-200-0320  
(16 ton truck)

Volume = (7.4 cu yd) (1.3 swell factor) = 9.6 cu yd

Cost = (\$ 10.69/cu yd) (9.6 cu yd) = \$ 103

Time = (9.6 cu yd) / (232 cu yd/day) = 0.04 days

Cost Subtotal \$ 198

Time Subtotal .2 days

**Lump Coal Storage Pad**

Concrete Demolition

Wall Volume = (38ft) (4ft) (1ft) + (80ft) (4ft) (1ft) = (472 cu ft) / 27 = 17.5 cu yd

Slab Volume = (38 ft) (80 ft) (0.67) = (2,027 cu ft) / 27 = 75.1 cu yd

Total Volume = 17.5 + 75.1 = 92.6 cu yd

Cost = (\$ 12.78/cu yd) (92.6 cu yd) = \$ 1,183

Time = (92.6 cu yd) / (35 cu yd/day) = 2.65 days

02220-875-5550 (Concrete disposal on Site) 002315-400-1300 (3 CY loader) 02320-200-0320  
(16 ton truck)

Volume = (92.6 cu yd) (1.3 swell factor) = 120.4 cu yd

Cost = (\$ 10.69/cu yd) (120.4 cu yd) = \$ 1,287

Time = (120.4 cu yd) / (232 cu yd/day) = 0.52 days

Cost Subtotal \$ 2,470

Time Subtotal 3.17 days