

C/007/0033  
Received 7/23/2014  
Task ID #4643

July 23, 2014

**Sent via Email on July 23, 2014**

Mr. Daron Haddock  
Utah Division of Oil, Gas & Mining Coal Program (DOGM)  
1594 West North Temple, Suite 1210  
P.O. Box 145801  
Salt Lake City, Utah 84114-5801

Dear Mr. Haddock:

Subject: Intermountain Power Agency (IPA)  
Permit Change for Proposed Oil Transloading Construction  
Wildcat Loadout Facility, C/007/0033

Intermountain Power Agency (IPA) is resubmitting the request that the oil storage system being developed by Associated Energy Services (AES) be added to the current Mining & Reclamation Plan (M&RP) for the Wildcat Loadout.

The issues discussed during our meeting with you and your staff on 21 May 2014 has been reviewed and addressed in this submittal.

An electronic copy of all submittal materials have been sent to DOGM via email to [ogmcoal@utah.gov](mailto:ogmcoal@utah.gov) on July 23, 2014.

IPA appreciates the efforts of your organization to insure the required regulations are met and helping to move the approval process along in a timely manner.

If you have any comments or questions, please contact me at (801) 748-1471.

Sincerely,



Lance C. Lee  
Project Manager  
Intermountain Power Project

cc: James A. Hewlett (via email)  
Intermountain Power Agency  
Minh T. Le (via email)  
William W. Engels (via email)

## APPLICATION FOR COAL PERMIT PROCESSING

Permit Change  New Permit  Renewal  Exploration  Bond Release  Transfer

Permittee: Intermountain Power Agency (IPA)

Mine: \_\_\_\_\_

Permit Number: **ACT 007/0033**

Title: Oil Storage System

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

Crude Oil Storage System consisting of truck unloading, storage tanks and railcar loading

**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: \_\_\_\_\_  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 # \_\_\_\_\_
- 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.

James A. Hewlett Gen. Mgr. 7-18-14 James A. Hewlett  
 Print Name Position Date Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 19th day of July, 2014

Notary Public: Michelle R. Miller, state of Utah.

My commission Expires: 8/30/2015

Commission Number: 613249

Address: 10655 S. River Front Parkway Suite 120  
 City: S Jordan State: UT Zip: 84095



<p><b>For Office Use Only:</b></p>	<p><b>Assigned Tracking Number:</b></p>	<p><b>Received by Oil, Gas &amp; Mining</b></p>
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## CHAPTER 1, LEGAL

### **R645-301-100. GENERAL**

Marlin Logistics, LLC(Marlin) in 2014, is building a crude oil unloading station, storage system, and railcar loading stations on the west side of the Utah Railroad tracks. This operation will be located on the west side of the Wildcat Coal Loading Facility. According to UDOGM, this facility will not be under their jurisdiction, but will be located within the Wildcat Loadout permit area. Items pertaining to this operation are addressed in Chapter 9 of the M&RP.

### **R645-301-110. LEGAL, FINANCIAL, AND COMPLIANCE INFORMATION**

#### **Legal, Financial, Compliance and Information**

The objective of this chapter is to set forth all relevant information concerning ownership and control of Intermountain Power Agency, the ownership and control of the property to be affected by mining activities and all other information and documentation required.

#### **Compliance Information**

a) Suspension and Revocation

Intermountain Power Agency, affiliates or persons controlled by or under common control with Intermountain Power Agency never had a mining permit suspended or revoked.

b) Forfeiture of Bond

Intermountain Power Agency, affiliates or persons controlled by or under common control with Intermountain Power Agency have not forfeited a mining bond or similar security in lieu of bond.

c) History of Violations

Intermountain Power Agency and affiliated companies have not received any violations received within the last three years prior to the date of this application. See attached amended and restated Appendix B Part B.

### **R645-301-111. INTRODUCTION**

#### **Introduction and Overview of Project Permit Application**

A. Introduction

This permit application is being submitted by Intermountain Power Agency, in order that coal can be stored and loaded out of its coal loadout facility located at

Wildcat Junction, near Helper, Utah. This facility is known as the Wildcat Loadout. Intermountain Power Agency is a political subdivision of the State of Utah. Intermountain Power Agency has a permit to operate its coal loading and storage facility known as Wildcat Loadout, in accordance with the appropriate regulations. This coal loadout facility is located on land owned by the United States of America in Carbon County, Utah.

Intermountain Power Agency was granted the right-of-way in August, 2011, by the Bureau of Land Management of the United States Department of the Interior.

**R645-301-200.            SOILS**

*HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.*

Marlin Logistics, LLC(Marlin) in 2014, is building a crude oil unloading station, storage system, and railcar loading stations on the west side of the Utah Railroad tracks. This operation will be located on the west side of the Wildcat Coal Loading Facility. According to UDOGM, this facility will not be under their jurisdiction, but will be located within the Wildcat Loadout permit area. Items pertaining to this operation are addressed in Chapter 9 of the M&RP.

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I. Soil Survey and Vegetation Inventory (please see Appendix D, Appendix D Supplement, and Appendix I).

1. Introduction

Appendix D is a survey conducted by the SCS in the Wildcat area and depicts the major soil types here. Appendix D also includes a survey including sampling as performed by Earl Jensen consulting as a soil scientist. Included in this survey is a soil profile description for each soil type identified on the permit area. Plate 11 depicts the soils as outlined by the Order 3 Survey performed by the SCS.

**R645-301-211.            PREMINING SOIL RESOURCES**

The entire disturbed area, with the exception of approximately 20 acres, was disturbed pre-law by previous owners, and no topsoil was saved.

Topsoil was removed prior to construction in 1984, and stored and protected for use in final reclamation. Please see Plate 13C for a summary of stored topsoil. Appendix D also includes a topsoil mass balance and

includes soil quality data from the Utah State University Testing Laboratory. The mass balance indicates that there may not be sufficient volume of topsoil for final reclamation. IPA has committed to identifying and testing for suitable substitute material either off the permit area or possibly within

## CHAPTER 3, BIOLOGY

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**R645-301-300.                    BIOLOGY**

**R645-301-310.                    INTRODUCTION**

### Vegetation Information

#### Introduction

An intensive detailed vegetation survey was not required or performed for the BLM Right-of-Way prior to the construction of this facility. It was a sagebrush/grass lowland with a Pinyon-Juniper community to the west. The following letter, shows the two reference areas identified by the SCS which show the general vegetative types in the area. Although the SCS identified these two areas, a third area was chosen by the Division of Oil, Gas, and Mining and Andalex Resources and is shown on Plate 1. A detailed vegetation inventory has been performed for Andalex by a qualified range scientist on this third reference area and is included in this document as Appendix I. This inventory will be the basis for a seed mixture to be used during reclamation. Please note that although the SCS identified two reference areas, the reference area being used for this MRP was designated by DOGM and Andalex for use during reclamation.

#### Description

**(Also R645-301-311, 320 and 321)**

## CHAPTER 4, LAND USE & AIR QUALITY

*HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.*

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R645-301-400.

### LAND USE AND AIR QUALITY

R645-301-410.

### LAND USE

R645-301-411.

### ENVIRONMENTAL DESCRIPTION

Because of the vegetation and poor rainfall, the land is presently used only for grazing, wildlife habitat, and limited outdoor recreation. Historically, the land has also been used for coal loading.

R645-301-411.100.

### PREMINING LAND USE INFORMATION

Past mining in the vicinity of Wildcat includes ARCO'S Beaver Creek Mines (ten miles to the west). The Swisher Coal Company previously used the Wildcat Siding.

R645-301-411.110.

### USES OF THE LAND AT THE TIME OF FILING APPLICATION

The Wildcat Loadout area would fall into two land use categories: 1) Fish and Wildlife habitat and recreation lands, and 2) Range Lands. County zoning regulations (1974) indicate all lands involved in the lease application area are within Zone M and G1 which is for mining and grazing. Current land use consists of grazing, wildlife habitat, and deer hunting. No other game species are found in the area. For recreational purposes, the land is suitable for deer hunting as well as ATV riding and occasionally snowmobiling. There are no oil and gas wells or water wells.

## CHAPTER 5, ENGINEERING

*HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.*

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**R645-301-500.     ENGINEERING**

**R645-301-510.     INTRODUCTION**

Volume II of this PAP contains plates which support the narrative of Volume I. These maps include, but are not limited to, contiguous surface and subsurface owners, the permit boundary including the area to be affected over the life of the project, a plate depicting all buildings and structures within 1,000 feet of the permit area and any surface or subsurface man-made features (powerline). Much of this information is combined on individual maps, e.g., the man-made features are on Plate 1 which also depicts buildings within 1,000 feet.

The location and boundaries of the revegetation reference area are shown on Plate 1.

Figure VII-2 depicts surface waters and receiving waters in the vicinity of the permit area. The Gordon Creek Road (County Road 139) is also depicted as it relates to the permit area on the surface facilities map.

### **Cross Sections, Maps, and Plans**

**(Also R645-301-511, 521.140, 521.150, 521.160, 521.170, 521.180 and R645-301-722)**

Many of the plans of this section are not applicable to the Wildcat Loadout Facility as it is strictly a surface facility and plans showing core samples, nature of coal seams, outcrops, active underground and abandoned workings or any others pertaining to mining (surface or underground) are not included.

## CHAPTER 6, GEOLOGY

*HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.*

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R645-301-600.

### GEOLOGY

R645-301-610.

### INTRODUCTION

R645-301-611.

### GENERAL REQUIREMENTS

R645-301-611.100.

### GEOLOGY WITHIN AND ADJACENT TO THE PERMIT AREA

#### Introduction

The Wildcat Loadout is in the Gordon Creek area of the Wasatch Plateau which is one of the major physiographic features in the region. The plateau rises from a base at approximately 6,000 feet in elevation to over 9,000 feet.

Spring Canyon and Ford Ridge (Forge Mountain) are the major topographic features of the area. The Price River Canyon and Spring Canyon are the major area drainages.

#### Geologic Setting (Stratigraphy and Structure)

The permit area sits on the Masuk Member of the Mancos Shale. The Mancos Shale in this area is in excess of 5,000 feet thickness. The Mancos Shale in the area is mainly dark bluish, gray shale which becomes sandy towards the top.

The oldest unit of the Mesa Verde Group is the Star Point Sandstone. It lacks coal and consists of three sandstone tongues. The beds of sandstone range in thickness from one to ten feet in most parts. The Mesa Verde Group immediately

## CHAPTER 7, HYDOLOGY

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### **R645-301-700.     HYDROLOGY**

### **R645-301-710.     INTRODUCTION**

It should be noted that the entire sedimentation and control plan, including impoundments, diversions and *reclamation hydrology* are discussed in *Appendix R, Sedimentation and Drainage Control Plan.*

### **R645-301-711.             GENERAL REQUIREMENTS**

See Sections R645-301-711.100 through R645-301-711.500

### **R645-301-711.100.             EXISTING HYDROLOGIC RESOURCES**

Existing Groundwater Resources

Regional Groundwater Hydrology

The groundwater resources of the Wasatch Plateau have not been studied to any great extent. The region has been characterized generally as one of regional groundwater recharge.<sup>1</sup> The lithologic nature of the upper cretaceous strata generally makes them unsuitable as significant aquifers. Much of the precipitation that falls in the Wasatch Plateau is removed by overland flow and evapotranspiration. The water that does enter the ground moves only short distances before discharging as springs and seeps, generally in the higher elevation areas. The regional water table is probably several hundred feet below the surface,<sup>1</sup> and probably coincides with the bottoms of the major streams, i.e., Price River.

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<sup>1</sup>Price and Arnow, 1974

## CHAPTER 8, BONDING

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### **R645-301-800. BONDING AND INSURANCE**

IPA currently holds a bond, calculated and approved by the Division, in the amount of \$1,144,000. This bond, and all supporting calculations, is included in this MRP in Appendix B, Part D.

It should be noted that only major headings and information specific to the IPA Wildcat Bond and Insurance are included in this chapter. If a major heading is noted "N/A" or "By Division" all subsequent headings in that series are also assumed "N/A" or "By Division".

### **R645-301-810. BONDING DEFINITIONS AND DIVISION RESPONSIBILITIES**

BY DIVISION

### **R645-301-820. REQUIREMENT TO FILE A BOND**

IPA currently holds a bond, approved by UDOGM in the amount of \$1,144,000 and it is included in this MRP in Appendix B, Part D.

### **R645-301-830. DETERMINATION OF BOND AMOUNT**

The bond amount has been determined through joint effort by IPA and the Division. The present amount of bond is \$1,144,000.00. Complete calculations are included in Appendix B, Part D. Bonded areas (disturbed areas) are shown on Plates 1 and 1B and further described in R645-301-542

**INTERMOUNTAIN POWER AGENCY**

**WILDCAT LOADOUT**

**MINING AND RECLAMATION PLAN**

**CHAPTER 9, OIL STORAGE**

**CHAPTER 9**

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**APPENDIS C - MARLIN LOGISTICS, LLC - BOND CALCULATIONS**

**R645-301-100 GENERAL**

This chapter is being submitted by Intermountain Power Agency, in order that a crude oil unloading, storage, and railcar loading systems can be installed on the west side of the Wildcat coal loading facility.

The crude oil facility will be operated by Marlin Logistics, LLC (Marlin). The resident agent is:

Brian Hess  
General Manager  
121 West 200 South  
Farmington, Utah 84025  
**(801) 386-1861**

Managers of the crude oil handling facilities are as follows:

<u>Name</u>	<u>Address</u>	<u>Title</u>	<u>Date Position Assumed</u>
<b>General Manger</b>			
Brian Hess	121 West 200 South Farmington, UT 84025	General Manager	July, 2012
<b>Site Manager</b>			
Scott Dimick		Site Manager <b>435-650-3221</b>	Feb. 2014

**R645-301-200 SOILS**

The crude oil facility is located in a previously disturbed area. ~~and will not require any removal of topsoil or subsoils as part of the construction or operational activities.~~ **The crude oil unloading facility and fire water tank will infringe on the Revegetation Test Plot "D" area. To insure that this soil is protected, the soil will be removed by using a truck and hydraulic backhoe and hauled to a different location of the test plot area, see Plate 1 of this submittal.**

The soil will be spread using a small bulldozer to configure the pile. The amount of material to be removed and stored is approximately 2,170 cubic yards. The perimeter of the newly created pile will have a base of 60 feet wide and 172 feet long and a height of 5 feet. The slopes of the pile will be graded to a 2:1 configuration.

The pile will be surrounded by silt fence to control the loss of sediment and will be reseeded to help stabilize the soil. The interim seed mix stated in Chapter 2, "Soils " of the Wildcat M&RP will be used to reseed the pile. The seed mix label will be available for the inspector to examine to ensure that the proper seed mix was used. The silt fence will remain in place until vegetation is reestablished as per the Division of Oil, Gas and Mining regulations.

Topsoil piles "B" and "E" in ASCA #5 will remain in place for the present.

The waste rock disposal area will remain in place for the present and will be maintained by the company operating the coal loading facility.

#### **R-645-301-300 BIOLOGY**

The vegetation types in the surrounding areas of the crude oil facilities are Pinyon-Juniper and Sagebrush-Grass. Refer to Chapter 3 of the M&RP for more details on plants communities.

There are no know threatened or endangered species within the crude oil facility based upon previous studies of the area.

The crude oil facility is partially located within crucial winter habitat for Rocky Mountain elk and for mule deer.

#### **R645-301-400 LAND USE**

The crude oil facility area will fall into two land use categories: 1) Fish and Wildlife habitat and recreation lands, and 2) Range Lands. County zoning regulations indicate all lands involved in the crude oil facility area are within Zone M and GI which is for mining and grazing. Current land use consists of grazing, wildlife habitat, and deer hunting. For recreational purposes, the land is suitable for deer hunting as well as ATV riding and occasionally snowmobiling.

A reconnaissance survey has been conducted of the existing area to assure that no archaeological or historical sites exist within the area. The results of the survey can be found in the *Confidential Binder* of the M&RP.

A reconnaissance survey has been conducted of the area where the oil storage facility will be constructed and the area for the dam and diversion ditch to direct undisturbed runoff around the oil storage facility. The results of the survey can be found in a report sent to the Bureau of Land Management, Price Field Office.

## **R645-301-500 ENGINEERING**

### Overview of Project

#### General Description

The Wildcat Loadout facility is centrally location for transporting oil from Central Utah and the Uintah Basin.

The unloading, storage, and loading of crude oil are designed to reduce chance of leaks and spills from degrading the area.

#### Summary Description

##### Storage Tanks

Four storage tanks with a combined capacity of approximately 250,000 barrels are used for crude oil storage. Two of the tanks will have a storage capacity of 100,000 barrels. These tanks will have a diameter of 146 feet and will be approximately 40 feet in height. Two of the tanks will have a storage capacity of 20,000 barrels. These tanks will have a diameter of 70 feet and will be approximately 32 feet in height. Each tank will have a sealed floating roof to prevent the escape of vapors. Each tank will contain coils for heating the oil during storage. The tanks will set on concrete foundations and pads.

The pads under the tanks will have open notches radiating from the center of the pad, each leading to the outside diameter of the tank to help detect bottom leaks of the tanks.

## Fire Suppression

A 5,000 ~~gallon~~ barrel tank containing water with foam injection capabilities will be connected by pipe and pumped to the tank roof to provide fire suppressant. Pipes will have a connecting valve outside the containment berm to allow suppressant from tank trucks.

## Truck Unloading

Four truck unloading lanes will be using the existing roadways within the facility. Truck unloading racks will be adjacent to the unloading lanes. Four and six inch piping and fixed pumps will be used to transfer the tanker truck oil to the storage tanks through a closed system. This will prevent vapors from escaping. The fixed pumps will have 50 and 100 horsepower motors that are approximately 20 inches wide and 48 inches tall.

## Railcar Loading

Mobile pump stations will be used to transfer oil from storage tanks to railcars through a closed system to prevent vapors from escaping. This closed system will consist of four and six inch pipes. All piping will be of steel construction and will be above ground, where feasible.

## Vapor Combustor

A smokeless, natural draft, air assisted and enclosed vapor combustor will be installed to combust any vapors generated during the loading process as required by the Utah Department of Environmental Quality. Two inch vapor vent manifold piping will be installed from each railcar station to the combustor where the vapors will be destroyed to 98 percent destruction efficiency. The combustor will be approximately three (3) feet in diameter and 20 feet tall utilizing propane for the pilot and assist gas.

## Substation

A 46 KV to 12.45 KV 3 MVA transformer substation will be located adjacent to the southeast corner of the existing warehouse fence.

## Yard Power

Two 12.45 KV feeds will leave the substation. One feed will be to a 12.45 KV to 480 V 500 KV transformer and will be used to supply power to two buildings. The second feed will be to a 12.75 KV to 480 v 2.5 KV transformer and will be used to supply power to control building.

## Yard Lighting

Approximately twelve light posts will be use at the truck unloading lanes, tank area and railcar loading tracks. The lighting fixtures will be cut-off design to cast light downward and minimize light pollution.

## Office

10' x 40' trailer will be used as an office.

## Diesel Fuel Tank

A 10,000 gallon fully enclosed diesel fuel tank will be used to fuel both truck and equipment.

## Construction

Construction began in the spring of 2014 and will be completed in the fall of 2014. Construction will be located and carried out so as to prevent and control erosion, siltation, water pollution, and damage to property in accordance with the regulations.

All facilities have been designed and constructed and will be maintained and used in a manner which prevents damage to wildlife and related environmental values (particularly as this relates to power line structures, regarding Fish and Wildlife).

Marlin will maintain all facilities in a manner which prevents additional contributions of suspended solids outside the permit area. All activities shall be conducted in a manner which minimizes damage to railroads, electric and telephone lines, and water and sewage lines, which pass over or through the permit area. Marlin realizes that maintenance of the facilities is a key to optimum operation. Constant upkeep of all surface facilities and structures has resulted in their maintaining their excellent condition.

### Construction Methods

#### Major Equipment

Excavations for foundations will be accomplished with backhoes and trackhoes. Leveling was required at the tank site; however, cut and fill was not implemented to a large degree because the area is relatively flat.

All surface pads will be stabilized and all other disturbed areas (pond embankments, other slopes, etc.) will be reseeded. Where possible, a rangeland seed drill will be used.

#### Maps

Crude oil unloading, storage, and railcar loading areas are all depicted on the surface facilities map, Plate 1.

#### Reclamation

Reclamation will be uncomplicated since this area is flat lying and topographically simple. All disturbed areas no longer required for the conduct of operations will be immediately revegetated. In the future, any areas no longer required for operations, will also be immediately revegetated.

Before buildings and final site preparation is completed, the topsoil was removed and revegetated to prevent erosion.

When the project is expired, perhaps in 20 years, extraneous material will be removed. Roads will be regraded and using the most advanced technology at the time, IPA will re-establish the terrain to as near the original contour as practical.

## Reclamation Timetable

Reclamation will be accomplished in two phases. Phase I will commence immediately after the project has expired. Phase I involves the majority of the reclamation steps. It will bring the site to near the original contour as practical with the exception of sedimentation ponds which will be left in place until revegetation has been determined complete. Prior to revegetation being complete, there is a possibility for runoff accumulating a sediment load, within the disturbed area.

The ponds left in place will prevent this runoff from leaving the disturbed area. Once the vegetation has been established which will probably take a minimum of two years, Phase II of the reclamation will commence. This phase involves the removal of the sediment ponds which were left, regrading, and revegetating these areas, and finally, IPA's commitment to monitoring.

### Phase I

The first step will be to remove structures. Since none of the structures will remain on site, this will be the largest part of the Phase I effort and will also be the most expensive. The following is a list of structures which will be brought down and removed either complete or as scrap/salvage.

1. 2 Oil Storage Tanks (100,000 barrels each)
2. 2 Oil Storage Tanks (20,000 barrels each)
3. 5,000 ~~Gallon~~ **Barrel** Water Tank
4. 4 Truck Unloading Stations
5. Vapor Combustor
6. 12 Light Posts
7. 46KV to 12.47KV Substation
8. Piping
9. Railcars Loading Stations
10. Office Trailer
11. Diesel Fuel Tank

Once the structures have been removed, then the recontouring and regrading portion will commence. It is anticipated that the structure removal will take approximately six months to complete so at this point. The recontouring would primarily involve the primary and secondary roads, the oil storage area, and unloading and loading areas. The undisturbed diversion west of the facility would become permanent at this point and would be capable of passing a 100 year precipitation event. The original natural drainage could not be restored because of the Utah Railroad. This natural drainage has been either blocked or diverted for the last 30 years by predecessors to IPA and/or Marlin Logistics, LLC.

#### **R645-301-600 GEOLOGY**

There are no changes in geology. Refer to Chapter 6, Geology of the M&RP for discussion on this subject.

#### **R645-301-700 HYDROLOGY**

The runoff from this area has always drained from the west of the railroad tracks to the east side using culverts under the tracks. Ditches intercepted the water at the culverts and divert the water to sediment pond and out of the ponds into natural drainage washes. With the construction of the crude oil storage facility and the possibility of leakage occurring the culverts under the tracks were either plugged or covered.

The hydrology for the crude oil storage facility was re-evaluated to determine the amount of runoff from undisturbed and disturbed areas above and within the site. To provide the maximum protection from potential events, a 100 year-24 hour storm event was used for these calculations. The precipitation event from this storm is 2.37 inches. This information was taken from NOAA Atlas 14, Volume 1, Version 5 for the Price Warehouse. SEDCAD Version 4 was used for these calculations.

The runoff from the different areas will either be handled by the construction of new structures or the use of existing structures. Four new structures will be construction. The first two structures will be a dam and a diversion ditch. These two structures will be to the west of the facility and designed to divert the majority of the undisturbed runoff around the facility to Garley Wash.

SEDCAD 4 was used to develop the flow rates and design of the drainage ditches, pond size and culvert verification. The storm event used was 100 yr. - 24 hr. and a rainfall depth of 2.73 inches. This was determined from the NOAA, Atlas Volume 14.

The new ditch will be trapezoidal in shape with a bottom width of three (3) feet and top width of 9.73 feet. The flow depth is estimated to be 2.60 feet. The ditch will have 1:1 side slopes and a one (1) foot freeboard. The flow rate is estimated to be 36.57 cfs.

A field inspection of the existing ditch has determined that the ditch is unsuitable. The existing ditch will be replaced using the new ditch design.

The existing ditch empties into a 24 inch half-round pipe and then into Garley Wash. The 24 inch half-round will not handle the new flow rate and will be replaced with a 30 inch half-round pipe.

The hydrology calculations can be found in Appendix A, MARLIN LOGISTICS, LLC OIL STORAGE HYDROLOGY PLAN, "AES Diversion Ditch".

Water monitoring station WCW-3 is located in the existing diversion ditch UD-1. The monitoring location is at the convergence of the existing ditch and the proposed new ditch. The monitoring station will be moved a short distance and relocated in the new diversion ditch. Refer to Plate 2A, Wildcat Loadout Proposed Drainage Map Response to DO-04.

The Upper and Lower cells are existing sediment ponds and will be used to contain the runoff from the rest of the undisturbed area from entering the facility.

Two new retention ponds will be constructed to capture the runoff from the site. These two ponds will be lined with either clay or a high density polyethylene liner to prevent the contaminated water from infiltrating into the ground. The hydrology calculations can be found in Appendix A, MARLIN LOGISTICS, LLC OIL STORAGE HYDROLOGY PLAN, "AES Drainage Area #1" and "AES Drainage Area #3".

Pond #1 is 50 feet wide and 120 feet long and will be 8 feet deep. The capacity of the pond is 0.85 acre-feet. The sediment amount reporting to the pond is based on modified Universal Soil Loss Equation shown on pages 9-10 and 9-11 in the amount of 0.02 ac-ft of sediment for a five year period. The runoff volume is 0.77 ac-ft. The total pond capacity required is 0.79 ac-ft. The pond will be cleaned out when the sediment level reaches the five year amount at an elevation of 6,173.16 feet. The water will be pumped out of the pond when the water level reaches an elevation of 6,179.22 feet or 80 percent of the water volume. A staff gauge will be used to determine when the levels have been reached. Before water is pumped, it will be tested to make sure that the water meets the water quality requirements.

### **SEDIMENT POND #1**

#### **SOIL EROSION TO POND #1**

Use the modified Universal Soil Loss Equation:

$$A = R * K * LS * VM$$

Ref: Israelsen, C. E., Fletcher, J. E., Haws, F. W., E. K. Israelsen, 1984 Erosion and Sedimentation in Utah: A Guide for Control, Utah Water Research Laboratories, Logan, Utah

A = Amount of Soil loss per unit area  
R = Rainfall Factor  
K= Soil Erodibility Factor  
LS = Topographic Factor  
VM = Erosion Control Factor  
= 1.2 for bare, compacted soil

For POND # 1

R = 11 Foot-Ton/Acre/Hour  
K= 0.1 Tons/Acre/EI

$$LS = \frac{(65.41s^2 + 4.56s + 0.065)}{s^2 * 10,000 + s^2 * 10,000} * \left( \frac{l}{72.6} \right)^m$$

l = slope length – 1,125 ft,  
s = slope gradient – 0.18%

m = 0.2 for 0 < s < 1  
0.3 for 1 < s < 3  
0.4 for 3.5 < s < 4.5  
0.5 for s > 5

$$LS = \frac{(65.41(.18)^2 + 4.56(.18) + 0.065)}{(.18)^2 * 10,000 + 9.18^2 * 10,000} * \left( \frac{1,125}{72.6} \right)^{0.2}$$

DRAINAGE AREA	SLOPE LENGTH	SLOPE %	R	K	LS	VM	A	ACRES	A (ft <sup>3</sup> /yr)
AES #1	1,125	0.18	11	0.1	0.58	1.2	0.78	10.35	158

Assume 100 lf/ft<sup>3</sup>

Safety Factor for Sediment Storage – 5 years

$$158 \text{ ft}^3/\text{yr} * 5 \text{ years} = 790 \text{ ft}^3 \text{ or } 0.02 \text{ ac.-ft.}$$

## SEDIMENT POND #2

### SOIL EROSION TO POND #2

Use the modified Universal Soil Loss Equation:

$$A = R * K * LS * VM$$

Ref: Israelsen, C. E., Fletcher, J.E., Haws, F. W., E. K. Israelsen, 1984 Erosion and Sedimentation in Utah: A Guide for Control, Utah Water Research Laboratories, Logan, Utah

A = Amount of Soil loss per unit area  
R = Rainfall Factor  
K = Soil Erodibility Factor  
LS = Topographic Factor  
VM = Erosion Control Factor  
= 1.2 for bare, compacted soil

For POND # 2

R = 11 Foot-Ton/Acre/Hour  
K = 0.1 Tons/Acre/EI

$$LS = \frac{(65.41s^2 + 4.56s + 0.065)}{s^2 * 10,000 + s^2 * 10,000} * \left(\frac{l}{72.6}\right)^m$$

l = slope length – 645 ft,  
s = slope gradient – 3.88%

m = 0.2 for 0 < s < 1  
0.3 for 1 < s < 3  
0.4 for 3.5 < s < 4.5  
0.5 for s > 5

$$LS = \frac{(65.41(3.88)^2 + 4.56(3.88) + 0.065)}{(3.88)^2 * 10,000 + (3.88)^2 * 10,000} * \left(\frac{645}{72.6}\right)^{0.4}$$

DRAINAGE AREA	SLOPE LENGTH	SLOPE %	R	K	LS	VM	A	ACRES	A (ft <sup>3</sup> /yr)
AES #1	645	3.88	11	0.1	0.08	1.2	0.10	3.88	7.44

Assume 100 lf/ft<sup>3</sup>

Safety Factor for Sediment Storage – 5 years

$$7.77 \text{ ft}^3/\text{yr} * 5 \text{ years} = 38.85 \text{ ft}^3 \text{ or } 0.000892 \text{ ac.-ft.}$$

Pond #2 is 60 feet wide and 60 feet long and will be 10 feet deep. The capacity of the pond is 0.576 acre-feet. The sediment amount reporting to the pond is based on modified Universal Soil Loss Equation shown on pages 9-11 and 9-12 in the amount of 0.000892 ac-ft of sediment for a five year period. The runoff volume is 0.43 ac-ft. The total pond capacity required is 0.43 ac-ft. The water will be pumped out of the pond when the water level reaches an elevation of 6,174.53 feet or 80 percent of the water volume, since the amount of sediment in the pond is so small. A staff gauge will be used to determine when the levels have been reached. Before water is pumped, it will be tested to make sure that the water meets the water quality requirements.

The ponds are designed to be total containment with no discharge. The reason for showing single spillway in each is because the program requires a spillway for the pond capacity to be calculated.

Water from each pond will be pumped to diversion ditch and discharged into Garley Wash. AES has an approved UPDES permit for discharging water, found in Appendix B, MARLIN LOGISTICS, LLC UPDES PERMIT.

## R645-301-800 BONDING

~~The crude oil facility is not related to coal handling operations and the facility will not be in DOGM's regulations. There will no change to the Bond Insurance already provide by IPA. The bonding action will be covered by a different agency.~~

Bond calculation is found Appendix C, MARLIN LOGISTICS, LLC BOND CALCULATIONS.

**APPENDIX A**  
MARLIN LOGISTICS, LLC  
OIL STORAGE HYDROLOGY PLAN

APPENDIX B  
MARLIN LOGISTICS, LLC  
UPDES PERMIT

APPENDIX C  
MARLIN LOGISTICS, LLC  
BOND CALCULATIONS



T13S, R9E, SEC. 33  
T14S, R9E, SEC. 4

BLM RIGHT-OF-WAY (U-48027)

**LEGEND**

	EXISTING BLM RIGHT OF WAY (U-48027)
	DOGM PERMIT BOUNDARY
	EXISTING DISTURBED AREA BOUNDARY (73.74 ACRES)
	AES OIL LOADING TERMINAL



CONTOUR INTERVAL - 2'  
PHOTOGRAPHY DATE: 10/22/2006

<b>INTERMOUNTAIN POWER AGENCY</b>	
<b>WILDCAT LOADOUT C/007/0030 EXISTING SURFACE FACILITY MAP</b>	
REVISION NUMBER: 5	SCALE: 1" = 150'
DATE: JULY 2010	<b>PLATE 1</b>

ASSOCIATED ENERGY SERVICES (AES)  
HYDROLOGY REPORT  
PRICE RAILCAR TRANSLOADING FACILITY  
CONSUMERS ROAD (CARBON COUNTY)

Prepared For:  
Brian Hess-AES

February 2014

Prepared By:



EIS Environmental & Engineering Consulting  
31 North Main Street  
Helper, Utah 84526

## **INTRODUCTION**

The purpose of this report is to address water issues at the Wildcat Loadout that pertains to the Associated Energy Services Price Railcar Transloading Facility (AES). Intermountain Power Agency (IPA) is the present lease holder of the Bureau of Land Management (BLM) Wildcat Loadout Lease. IPA is proposing to modify their existing lease to allow AES to expand their oil transloading operations beyond the Utah Railroad ROW. This expansion requires that existing water issues at the Wildcat Loadout be addressed. AES is expanding their operation to the west side of the Wildcat Loadout. This expansion will be limited to the area west of the Utah Railroad tracks.

In recent times, runoff waters on the west side of the property have been controlled by two sediment ponds referred to as the Upper & Lower Cell. Additional water not contained by the Upper & Lower Cell was diverted to an area referred to as the Depression Area. The Depression Area is where a large portion of the expansion operation will be located. Four large oil storage tanks contain over 10,000,000 gallons of oil will be located in this area.

The purpose of this hydrology report is to minimize the amount of runoff water that will report to the proposed oil tank location. This report will also show the size of two new ponds that will be required to prevent water from leaving this site. These ponds are to satisfy the Division of Water Quality requirement of preventing any water containing oil from leaving the site.

## **SCOPE OF WORK**

There is a small drainage area (79.55 acres) west of AES's proposed oil loading facilities, refer to the drawing Diversion Ditch Drainage Area located in Appendix 1. This drainage area contributes the greatest amount of runoff water to the proposed construction site. Other Drainage Areas 1,2, and 3 are shown on drawing Drainage Areas 1, 2, & 3 is located in Appendix 1, and also contribute runoff water to this site.

To provide the maximum protection from potential runoff events, a 100 year-24 hour storm event was used for these calculations. The precipitation event from this storm is 2.37 inches. This information was taken from NOAA Atlas 14, Volume 1, Version 5 for the Price Warehouses. The computer program used for these calculations was SEDCAD 4.

The runoff calculations for the Diversion Ditch Drainage Area, Drainage Area #1, Drainage Area #2, Diversion Area #3, and the Existing Wildcat Loadout Permanent Impoundments (Upper & Lower Cells) are shown in Appendix 3.

The Upper and Lower cells are existing sediment ponds that help contain runoff water coming off of the undisturbed drainage from getting onto the facility. Excess water that these two ponds cannot handle, was collected west of the Utah Railway tracks in an area

that DOGM refers to as the Depression Area. This Depression Area is where the new storage tanks are proposed to be located. The purpose of this Hydrology Report was to divert water away from the Depression Area.

### **Runoff Calculations**

The runoff calculations for the various areas are listed in the following table.

<b>Area</b>	<b>Peak Discharge (cfs)</b>	<b>Total Runoff Volume (ac-ft)</b>
Diversion Ditch	36.57	2.83
Drainage Area #1	4.95	.773
Drainage Area #2	3.54	.25
Drainage Area #3	1.59	.13

### **Retention Pond Capacity**

The retention size of the new and existing ponds are listed in the following table.

<b>Pond</b>	<b>Capacity (ac-ft)</b>	<b>Size</b>	<b>Depth</b>
Pond #1	.849	50' x 120'	9.0'
Pond #2	.157	50' x 50'	4.0'
Upper Cell (1)	.437	App. 60' x 110'	3.8'
Lower Cell (1)	1.114	App. 120' x 140'	2.3'

(1) Sediment from pond needs to be removed to obtain these capacities.

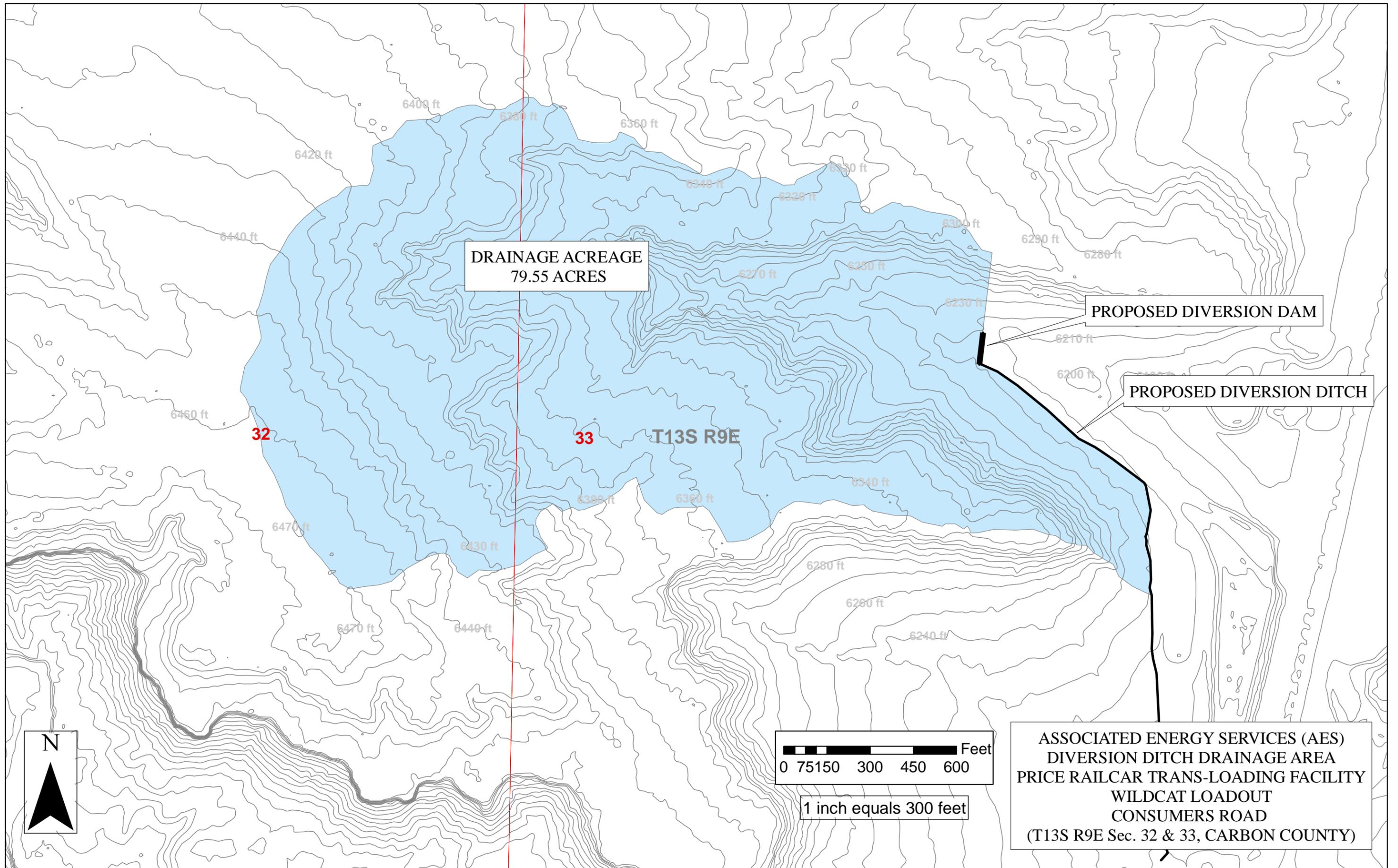
### **CONCLUSION**

The proposed Diversion Ditch will remove the majority of runoff water from the proposed construction site. Refer to Appendix 4 for the details on the diversion dam and ditch. This water will be diverted to another existing channel of Garley Wash. This finger of Garley Wash is located just south of the coal loadout bin where a 36" culvert diverts water under the Utah Railway tracks.

Water from Drainage Area #1 will be collected by Pond #1. This pond will be lined with clay or a high density polyethylene liner. Water from Drainage Area #2 will be collected by existing ponds (Upper & Lower Cells). These two cells should have sediment removed to get back to their original capacities. These two ponds will not be lined because they receive uncontaminated water from an undisturbed area. Water from Drainage Area #3 will be collected by Pond #2. This pond will also be lined with clay or a high density polyethylene liner.

**APPENDIX 1**

**DIVERSION DITCH DRAINAGE AREA DRAWING**  
**&**  
**DRAINAGE AREA 1, 2, AND 3 DRAWINGS**



ASSOCIATED ENERGY SERVICES (AES)  
DRAINAGE AREAS 1, 2, & 3  
PRICE RAILCAR TRANS-LOADING FACILITY  
WILDCAT LOADOUT  
CONSUMERS ROAD (CARBON COUNTY)

PROPOSED DIVERSION DAM

PROPOSED DIVERSION DITCH

DRAINAGE AREA # 2  
7.11 ACRES

EXISTING DIVERSION DITCH

UPPER CELL  
IMPOUNDMENT POND

LOWER CELL  
IMPOUNDMENT POND

DRAINAGE AREA # 1  
10.35 ACRES

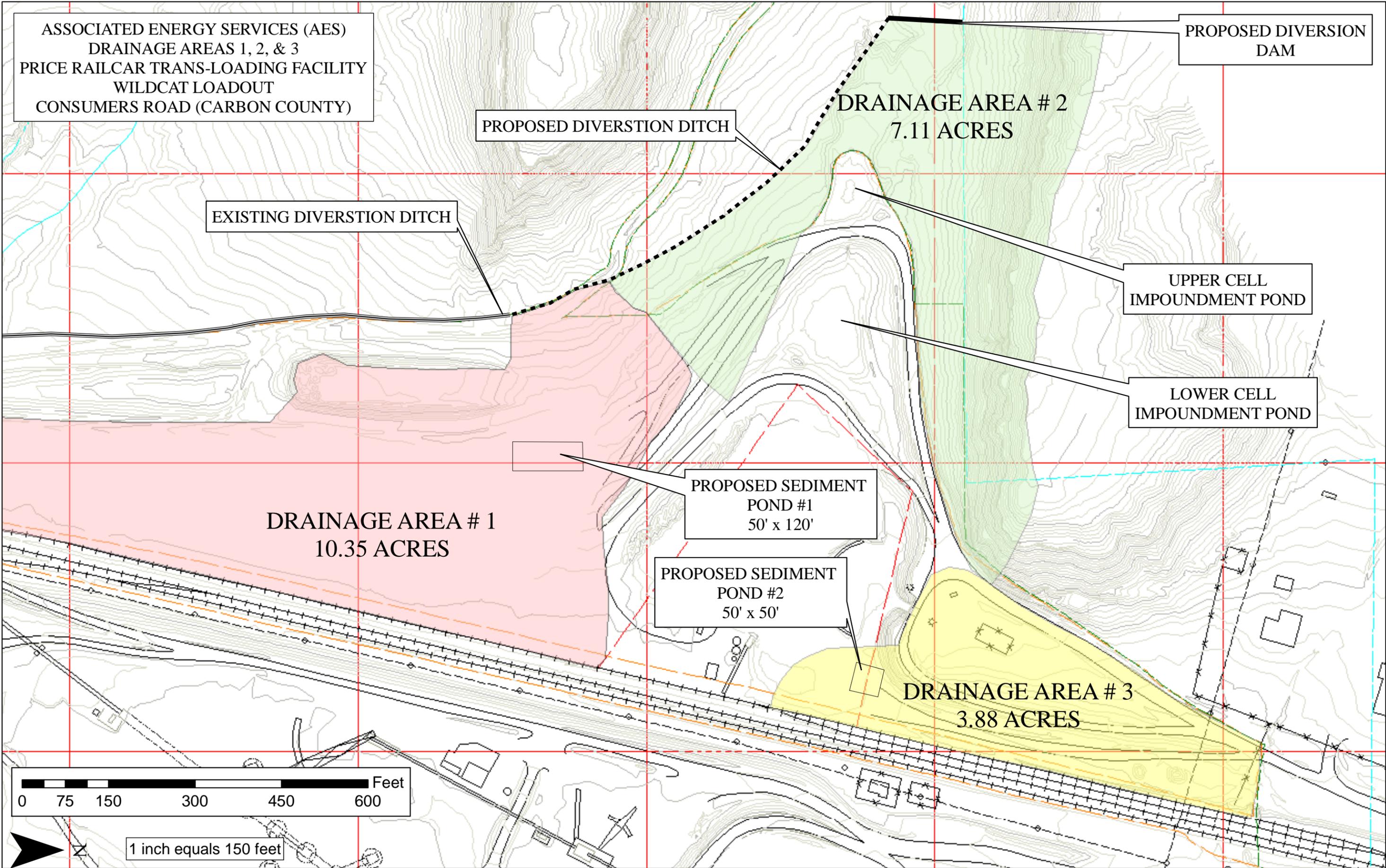
PROPOSED SEDIMENT  
POND #1  
50' x 120'

PROPOSED SEDIMENT  
POND #2  
50' x 50'

DRAINAGE AREA # 3  
3.88 ACRES



1 inch equals 150 feet



**APPENDIX 2**  
**NOAA PRECIPITATION FREQUENCY ESTIMATES**

NOAA Atlas 14, Volume 1, Version 5 PRICE

WAREHOUSES

Station ID: 42-7026

Location name: Price, Utah, US\*

Coordinates: 39.6167, -110.8000

Elevation:

Elevation (station metadata): 5700 ft\*

\* source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yelka, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.124 (0.107-0.146)	0.156 (0.137-0.184)	0.213 (0.184-0.251)	0.264 (0.229-0.312)	0.344 (0.288-0.406)	0.416 (0.340-0.493)	0.501 (0.400-0.596)	0.601 (0.461-0.721)	0.758 (0.551-0.929)	0.899 (0.626-1.12)
10-min	0.189 (0.163-0.222)	0.238 (0.209-0.281)	0.324 (0.280-0.381)	0.401 (0.348-0.474)	0.523 (0.439-0.618)	0.633 (0.517-0.750)	0.762 (0.609-0.906)	0.914 (0.701-1.10)	1.15 (0.839-1.41)	1.37 (0.953-1.70)
15-min	0.234 (0.202-0.275)	0.295 (0.259-0.348)	0.401 (0.347-0.473)	0.497 (0.431-0.587)	0.648 (0.544-0.766)	0.784 (0.641-0.930)	0.945 (0.755-1.12)	1.13 (0.870-1.36)	1.43 (1.04-1.75)	1.70 (1.18-2.11)
30-min	0.315 (0.272-0.370)	0.397 (0.348-0.468)	0.540 (0.466-0.636)	0.669 (0.580-0.791)	0.873 (0.732-1.03)	1.06 (0.863-1.25)	1.27 (1.02-1.51)	1.53 (1.17-1.83)	1.93 (1.40-2.36)	2.29 (1.59-2.84)
60-min	0.390 (0.337-0.458)	0.491 (0.431-0.579)	0.668 (0.577-0.787)	0.828 (0.718-0.979)	1.08 (0.906-1.28)	1.31 (1.07-1.55)	1.57 (1.26-1.87)	1.89 (1.45-2.27)	2.38 (1.73-2.92)	2.83 (1.97-3.52)
2-hr	0.461 (0.401-0.533)	0.570 (0.503-0.664)	0.736 (0.643-0.848)	0.898 (0.783-1.03)	1.15 (0.973-1.32)	1.37 (1.13-1.60)	1.63 (1.31-1.92)	1.94 (1.51-2.29)	2.45 (1.80-2.96)	2.91 (2.06-3.59)
3-hr	0.512 (0.452-0.583)	0.636 (0.559-0.727)	0.798 (0.704-0.906)	0.953 (0.838-1.08)	1.19 (1.02-1.35)	1.39 (1.17-1.61)	1.65 (1.36-1.94)	1.96 (1.56-2.32)	2.47 (1.89-2.99)	2.93 (2.16-3.63)
6-hr	0.629 (0.559-0.703)	0.769 (0.690-0.865)	0.944 (0.840-1.06)	1.09 (0.973-1.22)	1.30 (1.15-1.46)	1.48 (1.28-1.67)	1.74 (1.48-1.99)	2.05 (1.71-2.37)	2.56 (2.06-3.03)	3.01 (2.36-3.66)
12-hr	0.754 (0.684-0.837)	0.929 (0.840-1.03)	1.11 (1.00-1.24)	1.28 (1.14-1.42)	1.48 (1.32-1.66)	1.65 (1.45-1.86)	1.82 (1.58-2.08)	2.12 (1.81-2.43)	2.62 (2.20-3.04)	3.06 (2.51-3.70)
24-hr	0.983 (0.886-1.09)	1.21 (1.10-1.35)	1.47 (1.33-1.64)	1.67 (1.51-1.87)	1.95 (1.75-2.17)	2.16 (1.92-2.40)	2.37 (2.10-2.63)	2.58 (2.26-2.88)	2.85 (2.46-3.19)	3.08 (2.62-3.74)
2-day	1.12 (1.01-1.24)	1.38 (1.24-1.53)	1.67 (1.51-1.85)	1.90 (1.71-2.11)	2.21 (1.97-2.44)	2.44 (2.17-2.72)	2.68 (2.36-2.99)	2.92 (2.55-3.27)	3.22 (2.78-3.64)	3.45 (2.95-3.93)
3-day	1.20 (1.09-1.33)	1.49 (1.34-1.65)	1.80 (1.63-1.99)	2.05 (1.84-2.27)	2.39 (2.13-2.64)	2.64 (2.34-2.93)	2.90 (2.55-3.23)	3.16 (2.76-3.53)	3.49 (3.01-3.94)	3.75 (3.19-4.26)
4-day	1.29 (1.17-1.43)	1.59 (1.45-1.76)	1.93 (1.74-2.13)	2.20 (1.98-2.43)	2.56 (2.29-2.83)	2.84 (2.52-3.15)	3.12 (2.75-3.46)	3.40 (2.96-3.79)	3.77 (3.24-4.23)	4.04 (3.44-4.58)
7-day	1.48 (1.34-1.65)	1.83 (1.66-2.04)	2.23 (2.00-2.47)	2.54 (2.28-2.82)	2.96 (2.65-3.29)	3.27 (2.90-3.65)	3.60 (3.16-4.03)	3.92 (3.41-4.40)	4.34 (3.72-4.91)	4.65 (3.95-5.30)
10-day	1.69 (1.53-1.89)	2.10 (1.90-2.35)	2.55 (2.29-2.84)	2.90 (2.60-3.23)	3.37 (3.00-3.76)	3.71 (3.29-4.14)	4.06 (3.58-4.54)	4.41 (3.86-4.94)	4.85 (4.19-5.49)	5.18 (4.43-5.91)
20-day	2.09 (1.88-2.35)	2.60 (2.34-2.92)	3.18 (2.84-3.57)	3.63 (3.25-4.08)	4.24 (3.76-4.75)	4.69 (4.14-5.27)	5.14 (4.50-5.79)	5.59 (4.85-6.32)	6.17 (5.28-7.02)	6.60 (5.59-7.56)
30-day	2.44 (2.23-2.71)	3.03 (2.76-3.37)	3.67 (3.34-4.06)	4.16 (3.78-4.61)	4.80 (4.33-5.31)	5.26 (4.72-5.84)	5.72 (5.10-6.37)	6.16 (5.46-6.89)	6.72 (5.88-7.58)	7.13 (6.18-8.08)
45-day	2.92 (2.66-3.22)	3.62 (3.30-4.00)	4.39 (4.00-4.84)	4.98 (4.51-5.48)	5.73 (5.16-6.32)	6.28 (5.64-6.93)	6.81 (6.08-7.53)	7.31 (6.49-8.11)	7.95 (6.98-8.85)	8.40 (7.32-9.39)
60-day	3.39 (3.10-3.76)	4.21 (3.85-4.67)	5.12 (4.66-5.65)	5.81 (5.27-6.41)	6.69 (6.04-7.40)	7.34 (6.59-8.12)	7.96 (7.09-8.84)	8.55 (7.57-9.55)	9.30 (8.15-10.4)	9.83 (8.53-11.1)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

### **APPENDIX 3**

**AES DIVERSION DITCH CALCULATIONS  
AES DRAINAGE AREA #1 CALUCLATIONS  
AES DRAINAGE AREA #2 CALCULATIONS  
AES DRAINAGE AREA #3 CALCULATIONS  
&  
UPPER & LOWER CELL POND INFORMATION**

# **AES Diversion Ditch**

Tom Paluso

EIS Environmental & Engineering Consulting  
31 North Main  
Helper, Utah 84526

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## ***General Information***

### ***Storm Information:***

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	2.370 inches

### Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Channel	#1	==>	#2	0.111	0.415	Overflow Ditch
Channel	#2	==>	#3	0.000	0.000	
Null	#3	==>	End	0.000	0.000	



### Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	7.66	255.00	3,330.02	8.30	0.111
<b>#1</b>	<b>Muskingum K:</b>					<b>0.111</b>

**Structure Summary:**

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	79.550	79.550	36.57	2.83
#2	0.000	79.550	34.60	2.83
#3	0.000	79.550	34.60	2.83

### Structure Detail:

Structure #1 (Vegetated Channel)

Overflow Ditch

Trapezoidal Vegetated Channel Inputs:

Material: Bermuda grass

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Retardance Classes	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
3.00	1.0:1	1.0:1	1.5	D, B	1.00			6.0

Vegetated Channel Results:

	Stability Class D w/o Freeboard	Stability Class D w/ Freeboard	Capacity Class B w/o Freeboard	Capacity Class B w/ Freeboard
Design Discharge:	36.57 cfs		36.57 cfs	
Depth:	1.60 ft	2.60 ft	2.36 ft	3.36 ft
Top Width:	6.20 ft	8.20 ft	7.73 ft	9.73 ft
Velocity:	4.96 fps		2.89 fps	
X-Section Area:	7.37 sq ft		12.67 sq ft	
Hydraulic Radius:	0.978 ft		1.309 ft	
Froude Number:	0.80		0.40	
Roughness Coefficient:	0.0360		0.0751	

Structure #2 (Nonerodible Channel)

Structure #2 (Nonerodible Channel) Nonerodible Channel Inputs:

Material: Metal, Corrugated

Nonerodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:		34.60 cfs
Depth:		1.20 ft
Top Width:		2.50 ft
Velocity:		14.80 fps
X-Section Area:		2.34 sq ft
Hydraulic Radius:		0.610 ft
Froude Number:		2.70

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*Structure #3 (Null)*

***Subwatershed Hydrology Detail:***

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	79.550	0.111	0.111	0.415	71.000	M	39.57	2.832
	<b>Σ</b>	<b>79.550</b>						<b>36.57</b>	<b>2.832</b>
<b>#2</b>	<b>Σ</b>	<b>79.550</b>						<b>34.60</b>	<b>2.832</b>
<b>#3</b>	<b>Σ</b>	<b>79.550</b>						<b>34.60</b>	<b>2.832</b>

***Subwatershed Time of Concentration Details:***

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	7.66	255.00	3,330.02	8.300	0.111
<b>#1</b>	<b>1</b>	<b>Time of Concentration:</b>					<b>0.111</b>

***Subwatershed Muskingum Routing Details:***

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	7.66	255.00	3,330.02	8.300	0.111
<b>#1</b>	<b>1</b>	<b>Muskingum K:</b>					<b>0.111</b>

## **Railroad Culvert Sizing**

Culvert Inputs:

Length (ft)	Slope (%)	Manning's n	Max. Headwater (ft)	Tailwater (ft)	Entrance Loss Coef. (Ke)
108.00	1.00	0.0160	4.10	0.00	0.50

Culvert Results:

Minimum pipe diameter: 1 - 30 inch pipe(s) required

**Detailed Performance Curves**

Design Discharge = 36.57 cfs

Maximum Headwater = 4.10 ft

(BOLD indicates design pipe size)

Headwater (ft)	Discharge (cfs) ( 24 in)	Discharge (cfs) ( 30 in)	Discharge (cfs) ( 36 in)
0.41	1.11	<b>1.38</b>	1.65
0.82	3.11	<b>3.89</b>	4.66
1.23	5.71	<b>7.14</b>	8.57
1.64	8.80	<b>10.99</b>	13.19
2.05	12.29	<b>15.37</b>	18.44
2.46	15.84	<b>20.20</b>	24.24
2.87	18.69	<b>25.45</b>	30.54
3.28	21.20	<b>29.71</b>	37.31
3.69	23.40	<b>33.57</b>	43.50
4.10	25.02	<b>37.04</b>	48.98
4.51	26.45	<b>40.19</b>	53.91
4.92	27.81	<b>43.14</b>	58.42
5.33	29.10	<b>45.88</b>	62.61
5.74	30.34	<b>48.47</b>	66.54
6.15	31.53	<b>50.93</b>	70.24

# **AES Drainage Area #1**

Tom Paluso

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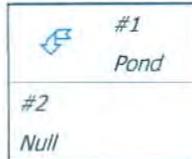
***General Information***

***Storm Information:***

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	2.370 inches

### Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.372	0.165	
Null	#2	==>	End	0.000	0.000	



### Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	7. Paved area and small upland gullies	0.18	2.00	1,125.00	0.84	0.372
<b>#1</b>	<b>Muskingum K:</b>					<b>0.372</b>

**Structure Summary:**

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1 In	10.350	10.350	4.95	0.77
Out			4.95	0.77
#2	0.000	10.350	4.69	0.77

### Structure Detail:

#### Structure #1 (Pond)

Pond Inputs:

Initial Pool Elev:	6,180.80 ft
Initial Pool:	0.82 ac-ft

#### Broad-crested Weir

Weir Width (ft)	Spillway Elev (ft)
50.00	6,180.80

Pond Results:

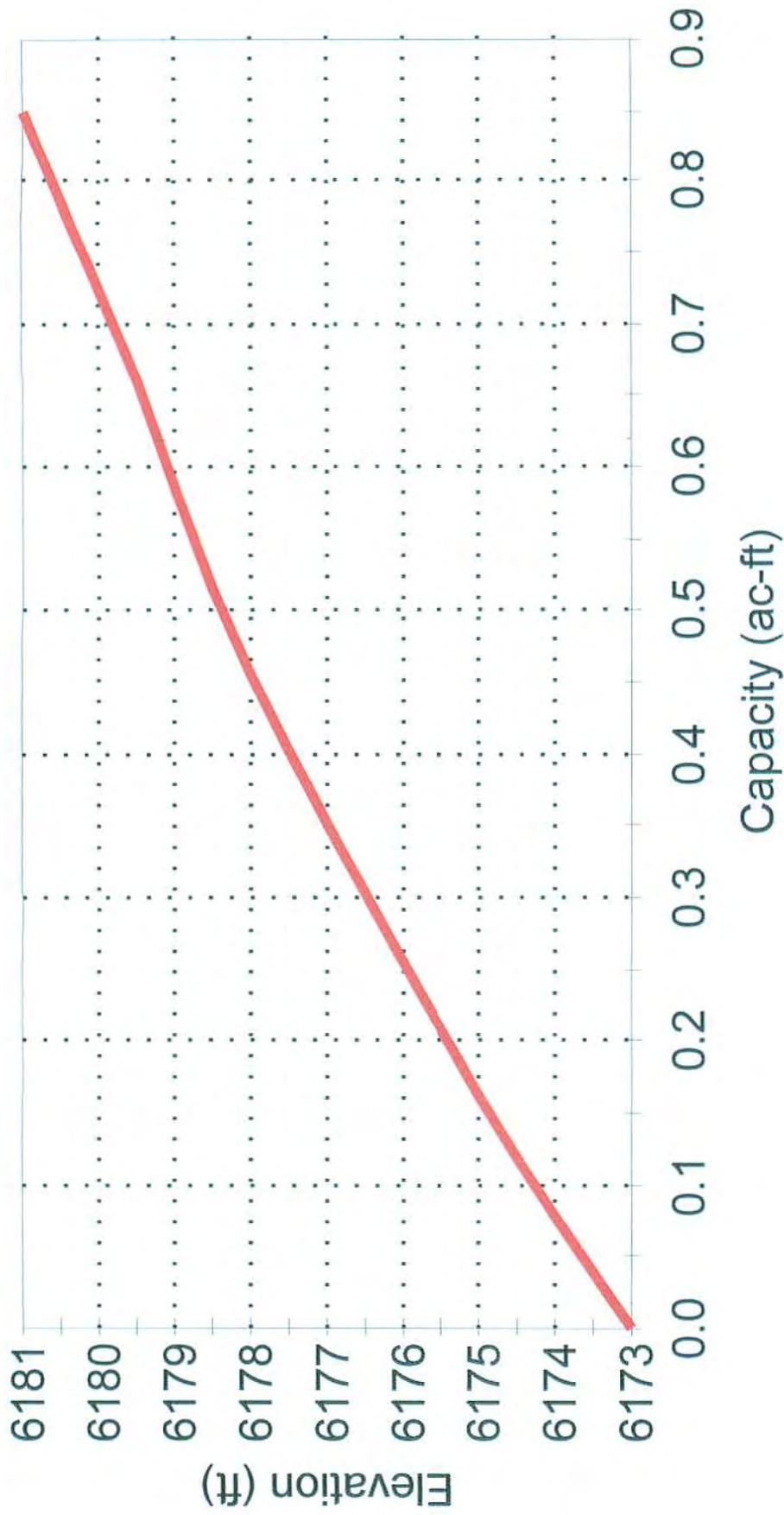
Peak Elevation:	6,180.87 ft
Dewater Time:	0.61 days

*Dewatering time is calculated from peak stage to lowest spillway*

#### Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,173.00	0.075	0.000	0.000	
6,173.50	0.078	0.038	0.000	
6,174.00	0.081	0.078	0.000	
6,174.50	0.084	0.119	0.000	
6,175.00	0.088	0.162	0.000	
6,175.50	0.091	0.207	0.000	
6,176.00	0.094	0.253	0.000	
6,176.50	0.097	0.301	0.000	
6,177.00	0.101	0.351	0.000	
6,177.50	0.104	0.402	0.000	
6,178.00	0.108	0.455	0.000	
6,178.50	0.130	0.515	0.000	
6,179.00	0.155	0.586	0.000	
6,179.50	0.138	0.659	0.000	
6,180.00	0.122	0.724	0.000	
6,180.50	0.126	0.786	0.000	
6,180.80	0.128	0.824	0.000	Spillway #1
6,180.87	0.129	0.834	4.947	14.75 Peak Stage
6,181.00	0.130	0.850	13.826	

# Pond #1 AES Drainage Area #1



Detailed Discharge Table

Elevation (ft)	Broad-crested Weir (cfs)	Combined Total Discharge (cfs)
6,173.00	0.000	0.000
6,173.50	0.000	0.000
6,174.00	0.000	0.000
6,174.50	0.000	0.000
6,175.00	0.000	0.000
6,175.50	0.000	0.000
6,176.00	0.000	0.000
6,176.50	0.000	0.000
6,177.00	0.000	0.000
6,177.50	0.000	0.000
6,178.00	0.000	0.000
6,178.50	0.000	0.000
6,179.00	0.000	0.000
6,179.50	0.000	0.000
6,180.00	0.000	0.000
6,180.50	0.000	0.000
6,180.80	0.000	0.000
6,181.00	13.826	13.826

*Structure #2 (Null)*

***Subwatershed Hydrology Detail:***

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	10.350	0.372	0.372	0.165	89.000	S	5.33	0.773
	$\Sigma$	<b>10.350</b>						<b>4.95</b>	<b>0.773</b>
#2	$\Sigma$	<b>10.350</b>						<b>4.69</b>	<b>0.773</b>

***Subwatershed Time of Concentration Details:***

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	7. Paved area and small upland gullies	0.18	2.00	1,125.00	0.840	0.372
#1	1	<b>Time of Concentration:</b>					<b>0.372</b>

***Subwatershed Muskingum Routing Details:***

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	7. Paved area and small upland gullies	0.18	2.00	1,125.00	0.840	0.372
#1	1	<b>Muskingum K:</b>					<b>0.372</b>

# **AES Drainage Area #2**

Tom Paluso

EIS Environmental & Engineering Consulting  
31 North Main Street  
Helper, Utah 84526

***Structure Summary:***

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1*	In	7.110	7.110	3.54	0.25
	Out	-	-	0.00	0.00
#2		0.000	7.110	3.54	0.00

*\*Denotes structures with incomplete design parameters. Results for these structures have not been evaluated, and may affect downstream structures.*

# AES Drainage Area #3

Tom Paluso

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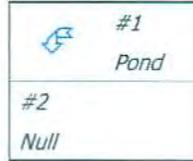
***General Information***

***Storm Information:***

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	2.370 inches

### Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.091	0.268	
Null	#2	==>	End	0.000	0.000	



### Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	5. Nearly bare and untilled, and alluvial valley fans	3.88	25.00	645.00	1.96	0.091
<b>#1</b>	<b>Muskingum K:</b>					<b>0.091</b>

***Structure Summary:***

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	In	3.880	3.880	5.19	0.43
	Out			5.07	0.43
#2		0.000	3.880	4.91	0.43

### Structure Detail:

Structure #1 (Pond)

Pond Inputs:

Initial Pool Elev:	6,177.50 ft
Initial Pool:	0.54 ac-ft

Broad-crested Weir

Weir Width (ft)	Spillway Elev (ft)
10.00	6,177.50

Pond Results:

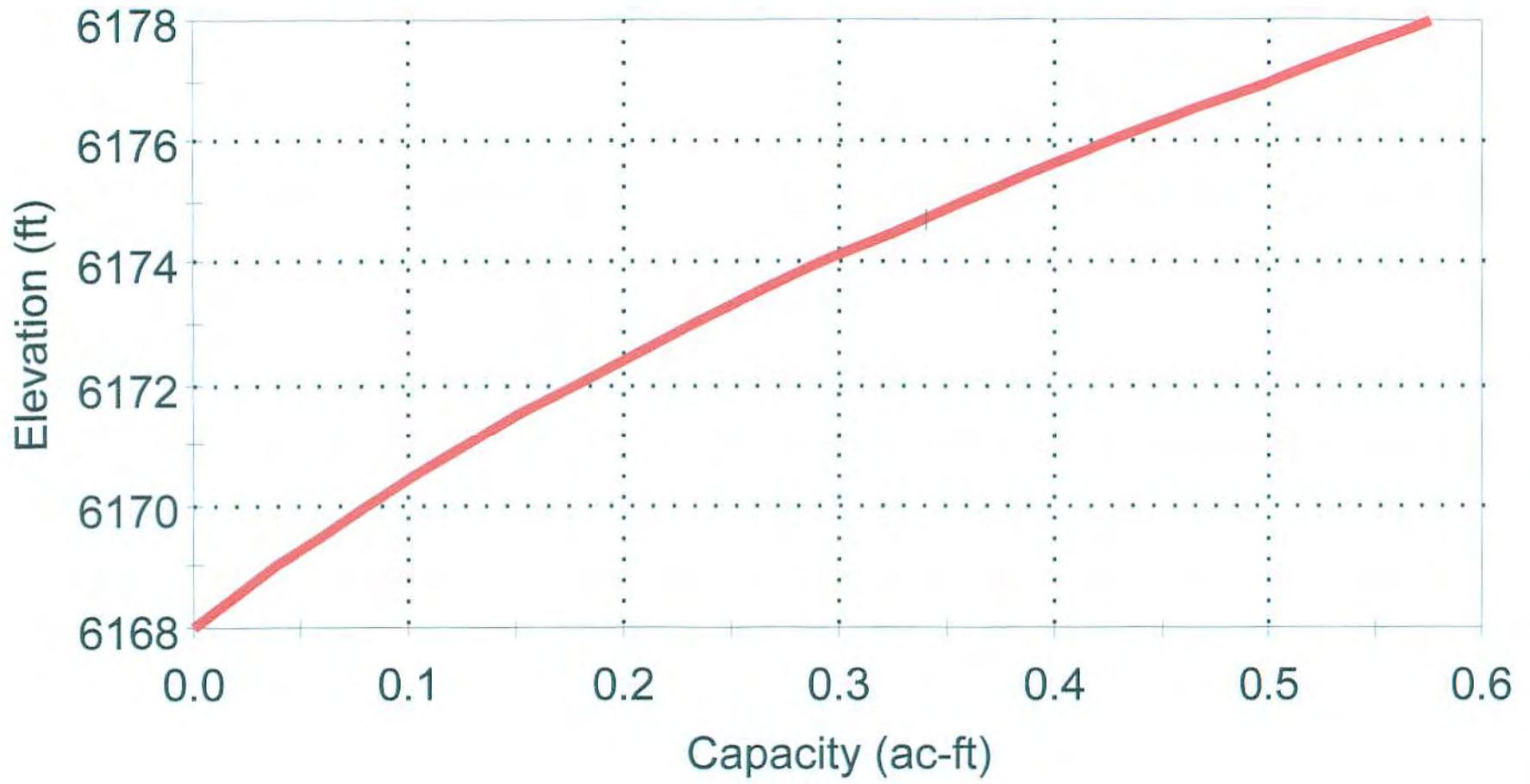
Peak Elevation:	6,177.76 ft
Dewater Time:	0.51 days

*Dewatering time is calculated from peak stage to lowest spillway*

### Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,168.00	0.037	0.000	0.000	
6,168.50	0.038	0.019	0.000	
6,169.00	0.040	0.038	0.000	
6,169.50	0.042	0.059	0.000	
6,170.00	0.044	0.080	0.000	
6,170.50	0.046	0.103	0.000	
6,171.00	0.049	0.127	0.000	
6,171.50	0.051	0.152	0.000	
6,172.00	0.053	0.178	0.000	
6,172.50	0.055	0.205	0.000	
6,173.00	0.057	0.233	0.000	
6,173.50	0.059	0.262	0.000	
6,174.00	0.062	0.292	0.000	
6,174.50	0.064	0.324	0.000	
6,175.00	0.067	0.357	0.000	
6,175.50	0.069	0.391	0.000	
6,176.00	0.072	0.426	0.000	
6,176.50	0.073	0.463	0.000	
6,177.00	0.075	0.500	0.000	

# Pond #2 AES Drainage Area #3



Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,177.50	0.076	0.537	0.000	Spillway #1
6,177.76	0.077	0.557	5.067	12.20 Peak Stage
6,177.90	0.077	0.568	7.807	
6,178.00	0.083	0.576	10.914	

Detailed Discharge Table

Elevation (ft)	Broad- crested Weir (cfs)	Combined Total Discharge (cfs)
6,168.00	0.000	0.000
6,168.50	0.000	0.000
6,169.00	0.000	0.000
6,169.50	0.000	0.000
6,170.00	0.000	0.000
6,170.50	0.000	0.000
6,171.00	0.000	0.000
6,171.50	0.000	0.000
6,172.00	0.000	0.000
6,172.50	0.000	0.000
6,173.00	0.000	0.000
6,173.50	0.000	0.000
6,174.00	0.000	0.000
6,174.50	0.000	0.000
6,175.00	0.000	0.000
6,175.50	0.000	0.000
6,176.00	0.000	0.000
6,176.50	0.000	0.000
6,177.00	0.000	0.000
6,177.50	0.000	0.000
6,177.90	7.807	7.807
6,178.00	10.914	10.914

*Structure #2 (Null)*

**Subwatershed Hydrology Detail:**

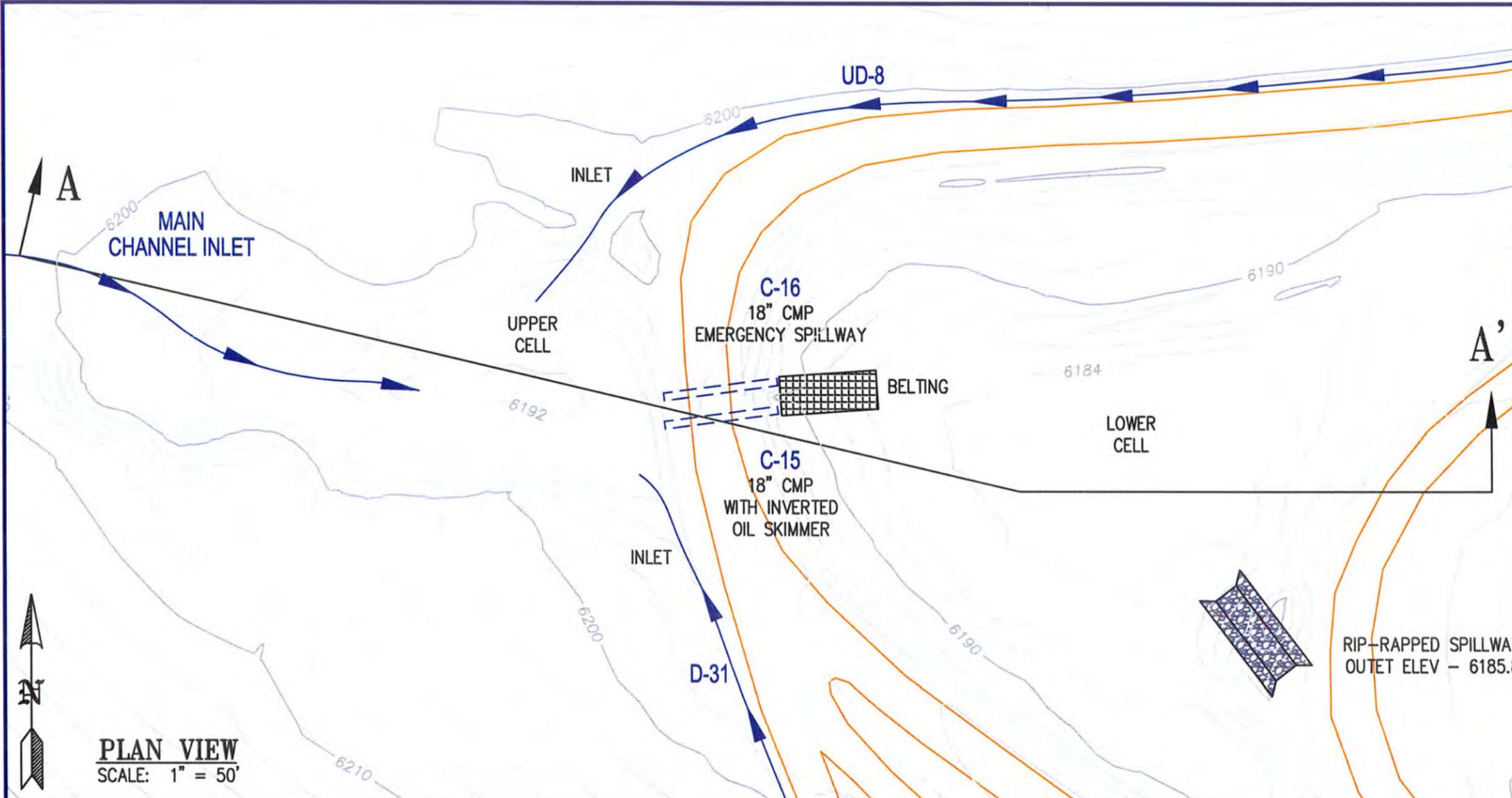
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	3.880	0.091	0.091	0.268	89.000	M	5.34	0.433
	$\Sigma$	<b>3.880</b>						<b>5.19</b>	<b>0.433</b>
#2	$\Sigma$ 	<b>3.880</b>						<b>4.91</b>	<b>0.433</b>

**Subwatershed Time of Concentration Details:**

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	3.88	25.00	645.00	1.960	0.091
#1	1	<b>Time of Concentration:</b>					<b>0.091</b>

**Subwatershed Muskingum Routing Details:**

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	3.88	25.00	645.00	1.960	0.091
#1	1	<b>Muskingum K:</b>					<b>0.091</b>



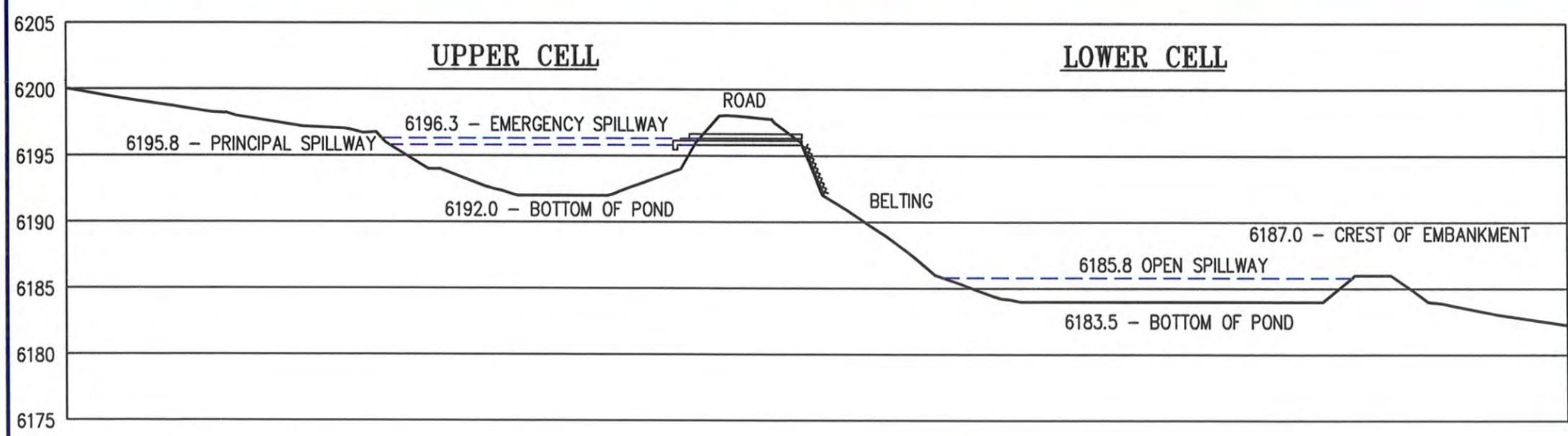
**PLAN VIEW**  
SCALE: 1" = 50'

**STAGE VOLUME**  
"PERMANENT IMPOUNDMENT"

ITEM	ELEVATION	VOLUME (Ac. Ft.)
BOTTOM OF UPPER CELL	6192.0	0
EMERGENCY SPILLWAY	6196.3	0.539
PRINCIPAL SPILLWAY	6195.8	0.437
BOTTOM OF LOWER CELL	6183.5	0.437
OVERFLOW FOR LOWER CELL	6185.8	1.114

**VOLUME:**  
 REQUIRED: 1.031 Ac. Ft.  
 EXISTING: 1.114 Ac. Ft.

**NOTE:**  
 NOT A SEDIMENT POND.



**SECTION A-A'**  
VERTICAL EXAGGERATION 5X

HORIZONTAL SCALE: 1" = 50'  
 VERTICAL SCALE: 1" = 10'

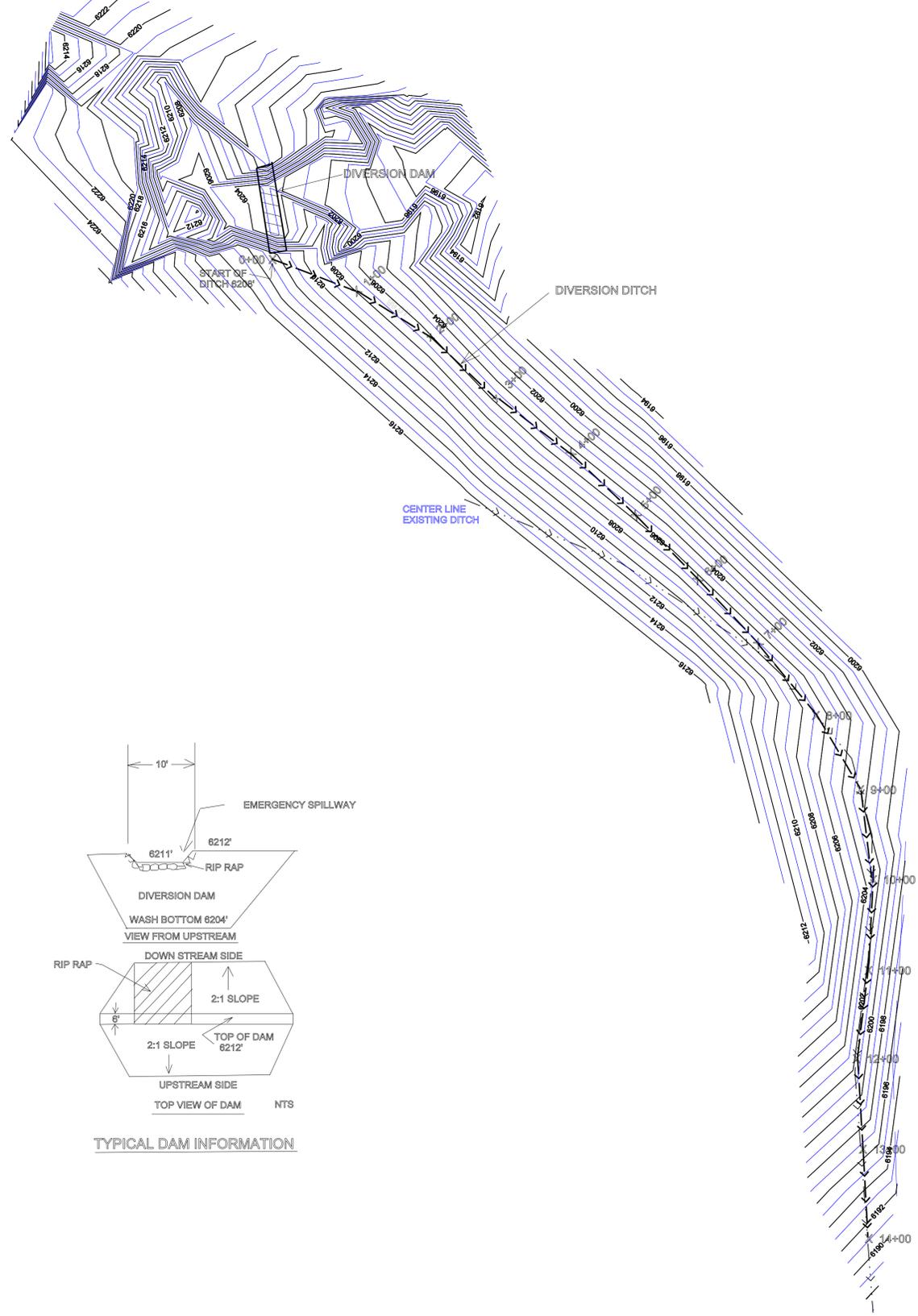


**ANDALEX**  
RESOURCES, INC.

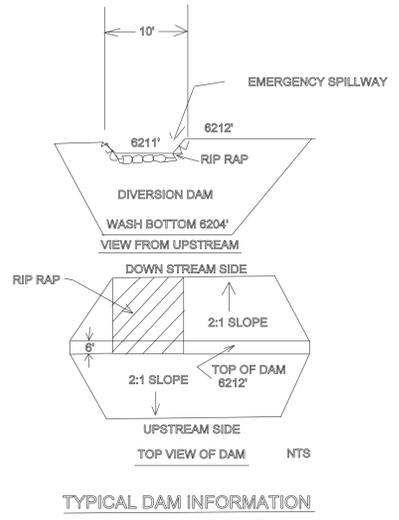
**WILDCAT LOADOUT**  
**PERMANENT IMPOUNDMENT**  
**EXISTING**

REVISION NUMBER: 2	SCALE: AS SHOWN
DATE: JULY 2010	<b>PLATE 3H</b>

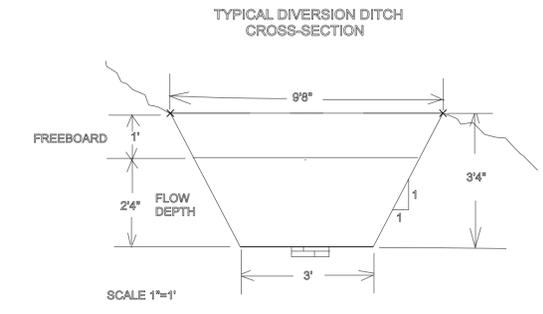
**APPENDIX 4**  
**DIVERSION DITCH & DAM INFORMATION**



DIVERSION DITCH INFORMATION			
STA	GROUND ELEVATION	BOTTOM DITCH ELEVATION	CUT FEET
0+00	6212'	6208'	4 AT DIVERSION DAM
1+00	6208'	6207'	1
2+00	6206'	6206'	0
3+00	6205'	6205'	0
4+00	6205'	6204'	1
5+00	6205.5'	6203'	3.5
6+00	6207'	6202'	5
7+00	6208'	6201'	7
8+00	6209'	6200'	9
9+00	6205.5'	6199'	6.5
10+00	6206'	6198'	8
11+00	6204'	6197'	7
12+00	6201'	6196'	5
13+00	6195.5'	6195'	0.5
14+00	6190.5'	6194'	0 AT EXISTING DITCH



TYPICAL DAM INFORMATION



EIS ENVIRONMENTAL & ENGINEERING CONSULTING 31 NORTH MAIN HELPER, UTAH 84528	
WILDCAT LOADOUT DRAINAGE MODIFICATION	
DRAWN BY: MORGAN MOON CO. L.L.C.	
SCALE 1"=80'	DRAWING NO. 1401

COPY



State of Utah

GARY R. HERBERT  
Governor

GREG BELL  
Lieutenant Governor

Department of  
Environmental Quality

Amanda Smith  
Executive Director

DIVISION OF WATER QUALITY  
Walter L. Baker, P.E.  
Director

AUG 07 2013

**CERTIFIED MAIL**  
**(Return Receipt Requested)**

Kit Pappas  
Intermountain Power Agency - Wildcat Loadout  
1646 East Castle Circle  
Price, UT 84501

Dear Mr. Pappas:

Subject: Permit Issuance for Utah Pollutant Discharge Elimination System (UPDES) Permit Coverage under the Utah General Coal Permit UTG040007, Intermountain Power Agency - Wildcat Loadout

Enclosed is UPDES Permit No. UTG040007 to provide permit coverage to Intermountain Power Agency - Wildcat Loadout. This General Coal permit was public noticed in the Emery County Progress and the Sun Advocate, and on the Division of Water Quality's website from March 26, 2013 through April 26, 2013. No comment was received during the public notice period. This permit is effective September 1, 2013, subject to the right to challenge this decision in accordance with the provisions of *Utah Administrative Code*, Section R317-9.

Copies of EPA form 3320-1, Discharge Monitoring Report (DMR) forms, for reporting and self-monitoring requirements as specified in the permit are available upon request (for those facilities not using NetDMR). As a reminder, DMR forms whether paper forms or NetDMR submittals, are due in our Office by the 28<sup>th</sup> day of each month following each monthly monitoring period.

A fee schedule was included in the Utah Department of Environmental Quality Budget appropriation request at the direction of the Legislature and in accordance with *Utah Code Annotated* 19-1-201. The fee schedule, as approved by the Legislature, includes a prescribed fee for specific Industrial Categories. The prescribed fee for UPDES Coal Mining and Preparation for a general permit is \$396.00 per year for each of the five years of the permit period. Your Company will be sent an invoice each year in August. An invoice for the current year's permit fee will be sent under separate cover in the next few weeks.

Mr. Pappas

Page 2

The Utah Division of Water Quality (DWQ) values your feedback, and as the State agency charged with the administration of issuing UPDES permits, we are continuously looking for ways to improve our quality of service to you. DWQ Director Walter L. Baker is committed to continually assessing and improving the level and quality of services provided to you. In an effort to improve the State UPDES permitting process, we are asking for your input. Please take a few minutes to comment on the quality of service you received by completing the "[Give Feedback to DWQ](#)" form link on DWQ's webpage at [www.waterquality.utah.gov](http://www.waterquality.utah.gov). Thank you for assisting us in improving our service to you.

If you have any questions with regard to this matter, please contact Mike Herkimer of the UPDES Engineering Section at (801) 536-4386 or e-mail at [mherkimer@utah.gov](mailto:mherkimer@utah.gov).

Sincerely,



John J. Whitehead  
Acting Director

JJW:MH:mc:jn

Enclosures (3)

1. Permit, (DWQ-2013-005346)
2. Fact Sheet Statement of Basis, (DWQ-2013-005347)
3. Wasteload Allocation, (DWQ-2013-002372)

cc: Amy Clark, EPA Region VIII (w/ enclosures)  
Brady Bradford, Southeastern Utah District Health Department

DWQ-2013-005345

STATE OF UTAH  
DIVISION OF WATER QUALITY  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
SALT LAKE CITY, UTAH

AUTHORIZATION TO DISCHARGE UNDER THE  
UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM  
(UPDES)

GENERAL PERMIT FOR COAL MINING

In compliance with provisions of the Utah *Water Quality Act, Title 19, Chapter 5, Utah Code Annotated ("UCA") 1953, as amended* (the "Act"),

**Wildcat Loadout**

as identified in the application No. **UTG040007, Intermountain Power Agency – Wildcat Loadout** is authorized to discharge from six outfall(s) to receiving waters named:

**Wildcat Wash**

in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions as set forth herein.

This permit shall become effective on September 1, 2013.

This permit and the authorization to discharge shall expire at midnight, August 31, 2018.

Signed this 7th day of August, 2013

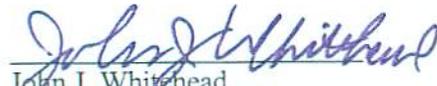
  
John J. Whitehead  
Acting Director

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I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Criteria for Inclusion in the General Permit for Coal Mining

This General permit shall apply only to the discharge of treated wastewater from:

Coal mining operations either new or existing in Utah which include or will include in part, or in whole, alkaline mine water drainage, storm water runoff from coal preparation plant associated areas, active mining areas, and post mining areas until the performance bond is released. The total dissolved solids (TDS) are limited to a concentration of 500 mg/L at all discharge points, or one ton per day as a sum from all discharges.

B. Notice of Intent for a General Permit for Coal Mining

Any facility which desires coverage under this general permit for coal mining and meets the requirements of Part I.A. may be issued general permit coverage by submitting a notice of intent (NOI) to the Division of Water Quality.

The NOI shall include:

1. A completed Environmental Protection Agency Application (EPA Form 3510-1) or equivalent information. Only EPA form 3510-1 is required, no other EPA forms are required.
2. Location and identification number (such as 001, 002, etc.) of each existing discharge and/or proposed discharge point(s). This includes the latitude and longitude to the nearest 15 seconds and the name of the receiving water(s).
3. A description of the source of the wastewater for each discharge point.
4. A description of the treatment given or proposed for the wastewater at each discharge point and if necessary a justification of why no treatment is required.
5. Flow characteristics for each discharge point such as whether flow is or will be continuous or intermittent and indicate projected and/or actual average and maximum flows in gallons per day (gpd), or million gallons per day (MGD).
6. Data for each discharge point for the following parameters:
  - a. Biochemical demand (BOD<sub>5</sub>).
  - b. Chemical oxygen demand (COD).
  - c. Total organic carbon (TOC).
  - d. Total suspended solids (TSS).
  - e. Flow.
  - f. Ammonia (as N).
  - g. Oil and grease.
  - h. Temperature.
  - i. pH.
  - j. Total dissolved solids (TDS).
  - k. Total iron and metals, cyanide, phenols located in *Table III of UAC R317-8-3.12*.
  - l. For discharge(s) of mine water or mine water and mine water mixed with surface runoff, provide results of previous whole effluent toxicity (WET) testing, or complete at least one acute WET test using two species and a full dilution series (five dilutions plus a

control). Sediment pond discharges which have only surface runoff do not require WET tests.

- m. Date and time of sampling for each parameter.
- n. Date and time of analysis for each parameter.
- o. Utah certified laboratory which has completed the analysis for each parameter.

For each discharge point the presence or absence of any toxic and/or priority pollutants as listed in *Table II, UAC R317-8-3.13*. If no data is available, indicate why the data is not available. The Director may waive the reporting requirements for any of these pollutants and parameters if the applicant submits a request for such a waiver before or when the NOI is submitted, which demonstrates that information adequate to support issuance of the permit can be obtained through less stringent reporting requirements. Additional information or clarification of information submitted in the NOI may be requested by the Director at any time.

Any permittee holding a general UPDES permit may request to be excluded from coverage of the general permit by applying for an individual permit. If an individual permit is issued, the applicability of the general permit is automatically terminated on the effective date of the individual permit. In addition, the Director may require any permittee authorized by a general permit to apply for and obtain an individual UPDES permit. Cases where an individual permit may be required include those listed in *UAC R317-8-2.5(2)(c)1*.

C. Description of Discharge Point(s).

The authorization to discharge provided under this permit is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a UPDES permit is a violation of the *Act* and may be subject to penalties under the *Act*. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the *Act*.

<u>Outfall Number</u>	<u>Location of Discharge Point(s)</u>
001	Sedimentation Pond "A", discharging to Wildcat Wash Latitude 39° 39' 11", Longitude 110° 54' 56"
002	Sedimentation Pond "B" discharging to Wildcat Wash Latitude 39° 39' 16", Longitude 110° 54' 58"
003	Sedimentation Pond "C" discharging to Wildcat Wash Latitude 39° 39' 21", Longitude 110° 54' 53"
004	Sedimentation Pond "D" discharging to Wildcat Wash Latitude 39° 39' 28", Longitude 110° 54' 30"
005	Sedimentation Pond "E" discharging to Wildcat Wash Latitude 39° 39' 34", Longitude 110° 54' 53"
006	Sedimentation Pond "F" discharging to Wildcat Wash Latitude 39° 39' 14", Longitude 110° 55' 11"

D. Narrative Standard.

It shall be unlawful, and a violation of this permit, for the permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum or other nuisances such as color, odor or taste, or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms: or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by bioassay or other tests performed in accordance with standard procedures.

E. Specific Limitations and Self-Monitoring Requirements

1. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from all Outfall(s). Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Effluent Limitations d/				Monitoring Requirements	
	30 Day Average	7 Day Average	Daily Minimum	Daily Maximum	Sample Frequency	Sample Type
Flow, <sup>1</sup> MGD	1.0	NA	NA	Report	Monthly	Measured c/
TSS, mg/L	25	35	NA	70	Monthly	Grab f/
Total Iron, mg/L	NA	NA	NA	1.00	Monthly	Grab f/
Oil & Grease, mg/L a/	NA	NA	NA	10	Monthly	Visual
Total Dissolved Solids, mg/L	NA	NA	NA	Report	Monthly	Grab f/
Total Dissolved Solids, tons/day b/	NA	NA	NA	1.0	Monthly	Grab f/
pH, standard units	NA	NA	6.5	9.0	Monthly	Grab
Sanitary Waste c/	NA	NA	NA	None	Monthly	Visual
Oil and Grease, floating solids, visible foam, a/	NA	NA	NA	None	Monthly	Visual

<sup>1</sup> MGD: million gallons per day      NA: not applicable

If the waters of the State into which the permittee is discharging are designated as non-attainment for any parameter, the permittee may be required to monitor for a specific parameter of concern as indicated in Part I.E.6 of the permit. Alternatively, as a result of this designation, the permittee may be required to obtain an individual permit based on UAC R317-8-2.5(2)(c)1.

- a/ A visual inspection for oil and grease, floating solids, and visible foam shall be performed monthly. There shall be no sheen, floating solids, or visible foam in other than trace amounts. If sheen is observed, a sample of the effluent shall be collected immediately thereafter and oil and grease shall not exceed 10 mg/L in concentration.
- b/ The permittee cannot discharge more than one ton per day of TDS as a sum from all discharge points. If the permittee can achieve 500 mg/l concentration or less at each outfall there shall be no tonnage limit applicable. If the permittee cannot meet either of the TDS limits mentioned above in this paragraph, the permittee may be required to obtain an individual permit.
- c/ There shall be no discharge of sanitary waste and visual observations shall be performed at least monthly to verify that no such discharges occur.
- d/ See Definitions, Part V for definition of terms.

e/ For intermittent discharge, the duration of the discharge shall also be reported.

f/ These samples may also be a composite sample.

2. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the final effluent before mixing with any receiving waters.
3. For discharges composed of surface water or mine water commingled with surface water, *40 CFR Part 434.63* allows alternate effluent limits to be applied when discharges result from specific runoff events, detailed below.

For runoff events (rainfall or snowmelt) less than or equal to a 10-year 24-hour precipitation event, settleable solids shall be substituted for TSS and shall be limited to 0.5 milliliters per liter (ml/L). All other effluent limitations must be achieved concurrently, as described in the permit.

4. Any discharge or increase in the volume of a discharge caused by precipitation within any 24 hour period greater than the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) may comply with the following limitation instead of the otherwise applicable limitations:

Pollutant or pollutant property	Effluent limitations
pH	6.5-9.0 at all times.

5. The operator shall have the burden of proof that the discharge or increase in discharge was caused by the applicable precipitation event described in Parts I.E.3 and 4. The alternate limitations in Parts I.E.3 and 4 shall not apply to treatment systems that treat underground mine water only.
6. Additional monitoring shall be required for facilities that discharge into waters or watersheds on the Utah 303(d) list of impaired waters. These facilities shall be required to monitor for the pollutant(s) that cause the impairment for these waters. The Division of Water Quality will incorporate any additional sampling requirements for parameters of concern.

F. Storm Water Requirements.

It has been determined that the aforementioned permittee has a regulated storm water discharge as per UAC R317-8-3.9., therefore, the following permit conditions governing storm water discharges apply.

1. Coverage of This Section

- a. Discharges Covered Under This Section. The requirements listed under this section shall apply to storm water discharges from the industrial facility.

- (1) Site Coverage. This section covers discharges of storm water associated with industrial activity to waters of the State from the confines of the facility listed on the cover page. Specific monitoring requirements have been included and are based on the requirements of the UPDES Multi Sector General Permit for Storm Water Discharges Associated with Industrial Activity, Permit No. UTR000000.

2. Prohibition of Non-Storm Water Discharges

The following non-storm water discharges may be authorized under this permit provided the non-storm water component of the discharge is in compliance with this section: discharges from fire fighting activities; fire hydrant flushing; potable water sources including waterline flushing; drinking fountain water; irrigation drainage and lawn watering; routine external building wash down water where detergents or other compounds have not been used in the process; pavement wash waters where spills or leaks of toxic or hazardous materials (including oils and fuels) have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

3. Storm Water Pollution Prevention Plan Requirements

The plan shall include, at a minimum, the following:

- a. Pollution Prevention Team. Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team who are responsible for developing the storm water pollution prevention plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.
- b. Description of Potential Pollutant Sources. Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials, which may be reasonably expected to have the potential as a significant pollutant source. Each plan shall include, at a minimum:
  - (1) Drainage. A site map must be maintained indicating drainage areas and storm water outfalls. For each area of the facility that generates storm water discharges associated with the waste water treatment related activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow and an identification of the types of pollutants that are likely to be present in storm water discharges associated with the activity. Factors to consider include the toxicity of the pollutant; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified. The site map shall include but not be limited to:
    - (2) Drainage direction and discharge points from all wastewater associated discharges.
    - (3) Location of any erosion and sediment control structure or other control measures utilized for reducing pollutants in storm water runoff.
    - (4) Location of any handling, loading, unloading or storage of chemicals or potential pollutants such as caustics, hydraulic fluids, lubricants, solvents or other

petroleum products, or hazardous wastes and where these may be exposed to precipitation.

- (5) Locations where any major spills or leaks of toxic or hazardous materials have occurred
  - (6) Location of any sand or salt piles.
  - (7) Location of fueling stations or vehicle and equipment maintenance and cleaning areas that are exposed to precipitation.
  - (8) Location of receiving streams or other surface water bodies.
  - (9) Locations of outfalls and the types of discharges contained in the drainage areas of the outfalls.
- c. Inventory of Exposed Materials. An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of 3 years prior to the effective date of this permit; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the effective date of this permit and the present; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.
- d. Spills and Leaks. A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility after the date of 3 years prior to the effective date of this permit. Such list shall be updated as appropriate during the term of the permit.
- e. Sampling Data. A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility, including a summary of sampling data collected during the term of this permit.
- f. Summary of Potential Pollutant Sources and Risk Assessment. A narrative description of the potential pollutant sources from the following activities associated with treatment works: access roads/rail lines; loading and unloading operations; outdoor storage activities; material handling sites; outdoor vehicle storage or maintenance sites; significant dust or particulate generating processes; and onsite waste disposal practices. Specific potential pollutants shall be identified where known.
4. Measures and Controls. The facility shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:
- a. Good Housekeeping. All areas that may contribute pollutants to storm waters discharges shall be maintained in a clean, orderly manner. These are practices that would minimize

the generation of pollutants at the source or before it would be necessary to employ sediment ponds or other control measures at the discharge outlets. Areas where good housekeeping practices should be implemented are storage areas for raw materials, waste materials and finished products; loading/unloading areas and waste disposal areas for hazardous and non-hazardous wastes. Examples of good housekeeping measures include: sweeping; labeling drums containing hazardous materials; and preventive monitoring practices or equivalent measures.

- b. Preventive Maintenance. A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.
- c. Spill Prevention and Response Procedures. Areas where potential spills that can contribute pollutants to storm water discharges can occur, and their accompanying drainage points, shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures and equipment for cleaning up spills shall be identified in the plan and made available to the appropriate personnel.
- d. Inspections. In addition to the comprehensive site evaluation required under *Part II.D.*, qualified facility personnel shall be identified to inspect designated equipment and areas of the facility on a periodic basis. The following areas shall be included in all inspections: loading and unloading areas for all significant materials; storage areas, including associated containment areas; waste management units; and vents and stacks from industrial activities. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained. The use of a checklist developed by the facility is encouraged.
- e. Employee Training. Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The pollution prevention plan shall identify how often training will take place, but training should be held at least annually (once per calendar year). Employee training must, at a minimum, address the following areas when applicable to a facility: petroleum product management; process chemical management; spill prevention and control; fueling procedures; general good housekeeping practices; proper procedures for using fertilizers, herbicides and pesticides.
- f. Record Keeping and Internal Reporting Procedures. A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under *Part II.C.* Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.

- g. Non-storm Water Discharges.
- (1) Certification. The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed in accordance with *Part V.G.* of this permit.
  - (2) Exceptions. Except for flows from fire fighting activities, sources of non-storm water listed in *Part II.B. (Prohibition of Non-storm Water Discharges)* that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.
  - (3) Failure to Certify. Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the Director within 180 days of the effective date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible. Non-storm water discharges to waters of the State that are not authorized by a UPDES permit are unlawful, and must be terminated.
- h. Sediment and Erosion Control. The plan shall identify areas, which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.
- i. Management of Runoff. The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity (*see Part II.C.2, Description of Potential Pollutant Sources*) shall be considered when determining reasonable and appropriate measures. Appropriate measures or other equivalent measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, wet detention/retention devices and discharging storm water through the waste water facility for treatment.

5. Comprehensive Site Compliance Evaluation

Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:

- a. Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.
- b. Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with *Part II.C.2. (Description of Potential Pollutant Sources)* and pollution prevention measures and controls identified in the plan in accordance with *Part II.C.3. (Measures and Controls)* shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.
- c. A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with *Part II.C.3.i.* shall be made and retained as part of the storm water pollution prevention plan for at least 3 years after the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with *Part IV.G (Signatory Requirements)* of this permit.
- d. Deadlines for Plan Preparation and Compliance. The facility shall prepare and implement a plan in compliance with the provisions of *Part II* of this permit within 270 days of the permit effective date.
- e. Keeping Plans Current. The facility shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the state or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified by the plan, or in otherwise achieving the general objective of controlling pollutants in storm water discharges associated with the activities at the facility.

6. Monitoring and Reporting Requirements

- a. Quarterly Visual Examination of Storm Water Quality. The facility shall perform and document a visual examination of a storm water discharge associated with industrial activity from each outfall, except discharges exempted below. The examination must be made at least once in each of the following designated periods during daylight hours unless there is insufficient rainfall or snow melt to produce a runoff event: January

through March: April through June: July through September: and October through December.

- b. Sample and Data Collection. Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well-lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual should carry out the collection and examination of discharges for entire permit term.
- c. Visual Storm Water Discharge Examination Reports. Visual examination reports must be maintained onsite in the pollution prevention plan. The report shall include the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.
- d. Representative Discharge. If the permittee reasonably believes multiple outfalls discharge substantially identical effluents, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by an outfall, the permittee may collect a sample of effluent from one such outfall and report that the observation data also applies to the substantially identical outfall(s) provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan.
- e. Adverse Conditions. When a discharger is unable to collect samples over the course of the visual examination period as a result of adverse climatic conditions, the discharger must document the reason for not performing the visual examination and retain this documentation onsite with the results of the visual examination. Adverse weather conditions, which may prohibit the collection of samples, include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).
- f. Inactive and Unstaffed Site. When a discharger is unable to conduct visual storm water examinations at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirement as long as the facility remains inactive and unstaffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and un-staffed so that performing visual examinations during a qualifying event is not feasible.

G. *EPCRA Section 313* Requirements.

1. In areas where *Section 313* water priority chemicals are stored, processed or otherwise handled, appropriate containment, drainage control and/or diversionary structures shall be provided. At a minimum, one of the following preventive systems or its equivalent shall be used:
  - a. Curbing, culverting, gutters, sewers, or other forms of drainage control to prevent or minimize the potential for storm water run-on to come into contact with significant sources of pollutants; or
  - b. Roofs, covers or other forms of appropriate protection to prevent storage piles from exposure to storm water and wind.

2. No tank or container shall be used for the storage of a *Section 313* water priority chemical unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature, etc.

Liquid storage areas for *Section 313* water priority chemicals shall be operated to minimize discharges of *Section 313* chemicals. Appropriate measures to minimize discharges of *Section 313* chemicals may include secondary containment provided for at least the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation, a strong spill contingency and integrity testing plan, and/or other equivalent measures.

3. Material storage areas for *Section 313* water priority chemicals other than liquids that are subject to runoff, leaching, or wind shall incorporate drainage or other control features that will minimize the discharge of *Section 313* water priority chemicals by reducing storm water contact with *Section 313* water priority chemicals.
4. Truck and rail car loading and unloading areas for liquid *Section 313* water priority chemicals shall be operated to minimize discharges of *Section 313* water priority chemicals. Protection such as overhangs or door skirts to enclose trailer ends at truck loading/unloading docks shall be provided as appropriate. Appropriate measures to minimize discharges of *Section 313* chemicals may include: the placement and maintenance of drip pans (including the proper disposal of materials collected in the drip pans) where spillage may occur (such as hose connections, hose reels and filler nozzles) for use when making and breaking hose connections; a strong spill contingency and integrity testing plan; and/or other equivalent measures.
5. Processing equipment and materials handling equipment shall be operated so as to minimize discharges of *Section 313* water priority chemicals. Materials used in piping and equipment shall be compatible with the substances handled. Drainage from process and materials handling areas shall minimize storm water contact with *Section 313* water priority chemicals. Additional protection such as covers or guards to prevent exposure to wind, spraying or releases from pressure relief vents from causing a discharge of *Section 313* water priority chemicals to the drainage system shall be provided as appropriate. Visual inspections or leak tests shall be provided for overhead piping conveying *Section 313* water priority chemicals without secondary containment.
6. Drainage from areas covered by *Parts II.F. 1, 2, 3, or 4* should be restrained by valves or other positive means to prevent the discharge of a spill or other excessive leakage of *Section 313* water priority chemicals. Where containment units are employed, such units may be emptied by pumps or ejectors; however, these shall be manually activated.

Flapper-type drain valves shall not be used to drain containment areas. Valves used for the drainage of containment areas should, as far as is practical, be of manual, open-and-closed design. If facility drainage is not engineered as above, the final discharge of all in-facility storm sewers shall be equipped to be equivalent with a diversion system that could, in the event of an uncontrolled spill of *Section 313* water priority chemicals, return the spilled material to the facility.

Records shall be kept of the frequency and estimated volume (in gallons) of discharges from containment areas.

7. Other areas of the facility (those not addressed in *Parts II.F. 1, 2, 3, or 4*, from which runoff that may contain *Section 313* water priority chemicals or spills of *Section 313* water priority chemicals could cause a discharge shall incorporate the necessary drainage or other control features to prevent discharge of spilled or improperly disposed material and ensure the mitigation of pollutants in runoff or leachate.
8. All areas of the facility shall be inspected at specific intervals identified in the plan for leaks or conditions that could lead to discharges of *Section 313* water priority chemicals or direct contact of storm water with raw materials, intermediate materials, waste materials or products. In particular, facility piping, pumps, storage tanks and bins, pressure vessels, process and material handling equipment, and material bulk storage areas shall be examined for any conditions or failures that could cause a discharge. Inspection shall include examination for leaks, wind blowing, corrosion, support or foundation failure, or other forms of deterioration or non-containment. Inspection intervals shall be specified in the plan and shall be based on design and operational experience. Different areas may require different inspection intervals. Where a leak or other condition is discovered that may result in significant releases of *Section 313* water priority chemicals to waters of the State, action to stop the leak or otherwise prevent the significant release of *Section 313* water priority chemicals to waters of the State shall be immediately taken or the unit or process shut down until such action can be taken. When a leak or non-containment of a *Section 313* water priority chemical has occurred, contaminated soil, debris, or other material must be promptly removed and disposed in accordance with Federal, State, and local requirements and as described in the plan.
9. Facilities shall have the necessary security systems to prevent accidental or intentional entry that could cause a discharge. Security systems described in the plan shall address fencing, lighting, vehicular traffic control, and securing of equipment and buildings.
10. Facility employees and contractor personnel that work in areas where *Section 313* water priority chemicals are used or stored shall be trained in and informed of preventive measures at the facility. Employee training shall be conducted at intervals specified in the plan, but not less than once per year. Training shall address: pollution control laws and regulations, the storm water pollution prevention plan and the particular features of the facility and its operation that are designed to minimize discharges of *Section 313* water priority chemicals. The plan shall designate a person who is accountable for spill prevention at the facility and who will set up the necessary spill emergency procedures and reporting requirements so that spills and emergency releases of *Section 313* water priority chemicals can be isolated and contained before a discharge of a *Section 313* water priority chemical can occur. Contractor or temporary personnel shall be informed of facility operation and design features in order to prevent discharges or spills from occurring.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling

Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Sludge samples shall be collected at a location representative of the quality of sludge immediately prior to the use-disposal practice.

B. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10*, unless other test procedures have been specified in this permit.

C. Penalties for Tampering

The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Reporting of Monitoring Results

Monitoring results obtained during the previous month shall be summarized for each month and reported monthly on a Discharge Monitoring Report Form (EPA No. 3320-1), post-marked no later than the 28th day of the month following the completed reporting period. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part IV.G)*, and submitted to the Director, Division of Water Quality at the following address:

original to: Department of Environmental Quality  
Division of Water Quality  
288 North 1460 West  
PO Box 144870  
Salt Lake City, Utah 84114-4870

E. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Additional Monitoring by the Permittee

If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10* or as otherwise specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.

G. Records Contents

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;

4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

H. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location.

I. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance which may seriously endanger health or environment as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 538-6146, or 24 hour answering service (801) 536-4123.
2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4123 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:
  - a. Any noncompliance which may endanger health or the environment;
  - b. Any unanticipated bypass which exceeds any effluent limitation in the permit (*See Part III.G, Bypass of Treatment Facilities.*);
  - c. Any upset which exceeds any effluent limitation in the permit (*See Part III.H. Upset Conditions.*); or,
  - d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit.
3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
  - a. A description of the noncompliance and its cause;
  - b. The period of noncompliance, including exact dates and times;
  - c. The estimated time noncompliance is expected to continue if it has not been corrected; and,
  - d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
  - e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.

4. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality. (801) 538-6146.
5. Reports shall be submitted to the addresses in *Part II.D. Reporting of Monitoring Results*.

J. Other Noncompliance Reporting

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part II.D* are submitted. The reports shall contain the information listed in *Part III.1.3*.

K. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit: and,
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action: for permit termination, revocation and reissuance, or modification: or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions

The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions of the Act is subject to a fine not exceeding \$25,000 per day of violation: Any person convicted under UCA 19-5-115(2) a second time shall be punished by a fine not exceeding \$50,000 per day. Except as provided at Part III.G. Bypass of Treatment Facilities and Part III.H. Upset Conditions, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances

Collected screening, grit, solids, sludges, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not directly enter either the final effluent or waters of the state by any other direct route.

G. Bypass of Treatment Facilities.

1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to parts 2. and 3. of this section.
2. Prohibition of Bypass.
  - a. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

- (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;
  - (2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and
  - (3) The permittee submitted notices as required under section G.3.
- b. The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed in sections G.2a. (1), (2) and (3).
3. Notice.
- a. Anticipated bypass. Except as provided above in section G.2. and below in section G. 3.b. if the permittee knows in advance of the need for a bypass, it shall submit prior notice, at least ninety days before the date of bypass. The prior notice shall include the following unless otherwise waived by the Director:
    - (1) Evaluation of alternative to bypass, including cost-benefit analysis containing an assessment of anticipated resource damages;
    - (2) A specific bypass plan describing the work to be performed including scheduled dates and times. The permittee must notify the Director in advance of any changes to the bypass schedule;
    - (3) Description of specific measures to be taken to minimize environmental and public health impacts;
    - (4) A notification plan sufficient to alert all downstream users, the public and others reasonably expected to be impacted by the bypass;
    - (5) A water quality assessment plan to include sufficient monitoring of the receiving water before, during and following the bypass to enable evaluation of public health risks and environmental impacts; and
    - (6) Any additional information requested by the Director.
  - b. Emergency Bypass. Where ninety days advance notice is not possible, the permittee must notify the Director, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Director the information in section G.3.a.(1) through (6) to the extent practicable.
  - c. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass to the Director as required under Part II.I., Twenty Four Hour Reporting. The permittee shall also immediately notify the Director of the Department of Natural Resources, the

public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

H. Upset Conditions

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of paragraph 2. of this section are met. Director's administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.
2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
  - b. The permitted facility was at the time being properly operated;
  - c. The permittee submitted notice of the upset as required under Part II.I. Twenty-four Hour Notice of Noncompliance Reporting; and,
  - d. The permittee complied with any remedial measures required under Part III.D, Duty to Mitigate.
3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of *The Water Quality Act of 1987* for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

J. Changes in Discharge of Toxic Substances

Notification shall be provided to the Director as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
  - a. One hundred micrograms per liter (100 ug/L);
  - b. Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
  - c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(7)* or (10); or,
  - d. The level established by the Director in accordance with *UAC R317-8-4.2(6)*.

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
  - a. Five hundred micrograms per liter (500 ug/L):
  - b. One milligram per liter (1 mg/L) for antimony:
  - c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(9)*: or.
  - d. The level established by the Director in accordance with *UAC R317-8-4.2(6)*.

K. Industrial Pretreatment

Any wastewaters discharged to the sanitary sewer, either as a direct discharge or as a hauled waste, are subject to Federal, State and local pretreatment regulations. Pursuant to Section 307 of *The Water Quality Act of 1987*, the permittee shall comply with all applicable federal General Pretreatment Regulations promulgated at *40 CFR 403*, the State Pretreatment Requirements at *UAC R317-8-8*, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the wastewaters.

In addition, in accordance with *40 CFR 403.12(p)(1)*, the permittee must notify the POTW, the EPA Regional Waste Management Director, and the State hazardous waste authorities, in writing, if they discharge any substance into a POTW which if otherwise disposed of would be considered a hazardous waste under *40 CFR 261*. This notification must include the name of the hazardous waste, the EPA hazardous waste number, and the type of discharge (continuous or batch).

IV. GENERAL REQUIREMENTS

A. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the Director of any planned changes at least 30 days prior to their implementation.

B. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

F. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

G. Signatory Requirements

All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer or ranking elected official
2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - a. The authorization is made in writing by a person described above and submitted to the Director, and,
  - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager,

superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to authorization. If an authorization under paragraph IV.G.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph IV.G.2 must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section shall make the following 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 assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those 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."

H. Penalties for Falsification of Reports

The *Act* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports

Except for data determined to be confidential under *UAC R317-8-3.2*, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of Director. As required by the *Act*, permit applications, permits and effluent data shall not be considered confidential

J. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the *Act*.

K. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

- L. Severability  
The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
- M. Transfers  
This permit may be automatically transferred to a new permittee if:
1. The current permittee notifies the Director at least 20 days in advance of the proposed transfer date;
  2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
  3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.
- N. State Laws  
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by *UCA 19-5-117*.
- O. Water Quality-Reopener Provision  
This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:
1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
  2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.
  3. A revision to the current Water Quality Management Plan is approved and adopted which calls for different effluent limitations than contained in this permit.
- P. Toxicity Limitation-Reopener Provision  
This permit may be reopened and modified (following proper administrative procedures) to include whole effluent toxicity (WET) testing, a WET limitation, a compliance schedule, a compliance date, additional or modified numerical limitations, or any other conditions related to the control of toxicants if toxicity is detected during the life of this permit.

V. GLOSSARY OF TERMS

A. Definitions.

1. The "30-day (and monthly) average" is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.
2. The "7-day (and weekly) average" is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains the Saturday.
3. "Daily Maximum" ("Daily Max.") is the maximum value allowable in any single sample or instantaneous measurement.
4. "Composite samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the composite sample period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:
  - a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;
  - b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;
  - c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,
  - d. Continuous collection of sample, with sample collection rate proportional to flow rate.
5. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.
6. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
7. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

8. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
9. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
10. "Director" means Director of the Utah Division of Water Quality.
11. "EPA" means the United States Environmental Protection Agency.
12. "Act" means the "*Utah Water Quality Act*".
13. "Best Management Practices" ("*BMPs*") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. *BMPs* also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
14. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.
15. "*CWA*" means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.
16. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agriculture storm water runoff.
17. "Significant spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under *Section 311 of the Clean Water Act* (see *40CFR 110.10* and *40 CFR 117.21*) or *Section 102 of the CERCLA* (see *40 CFR 302.4*).
18. "Storm water" means storm water runoff, snow melt runoff, and surface runoff and drainage.
19. "Waste pile" means any noncontainerized accumulation of solid, nonflowing waste that is used for treatment or storage.
20. "10-year, 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable reoccurrence interval of once in 10 years. This information is available in *Weather Bureau Technical Paper no. 40*, May 1961 and *NOAA Atlas 2*, 1973 for the 11 Western States, and may be obtained from the National Climatic center of the Environmental Data Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.
21. The term "coal preparation plant" means a facility where coal is crushed, screened, sized and cleaned, dried, or otherwise prepared and loaded for transit to a consuming facility.

22. The term “coal preparation plant associated areas” means the coal preparation plant yards, immediate access roads, coal refuse piles, and coal storage piles and facilities
23. “Section 313 water priority chemicals” means a chemical or chemical categories that:
- a. Are listed a 40 CFR 372.65 pursuant to *Section 313* of the *Emergency Planning and Community Right-to-Know Act (EPCRA)* (also known as *Title III of the Superfund Amendments and Reauthorization Act (SARA)* of 1986);
  - b. Are present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and
  - c. Meet at least one of the following criteria:
    - (1) Are listed in *Appendix D* of *40 CFR Part 122* on either Table II (organic priority pollutants), Table III (certain metals, cyanides and phenols) or Table V (certain toxic pollutants and hazardous substances);
    - (2) Are listed as a hazardous substances pursuant to *Section 311(b)2(A)* of the *CWA* at *40 CFR 116.4*; or
    - (3) Are pollutants for which EPA has published acute or chronic water quality criteria.

DWQ-2013-002268

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**FACT SHEET STATEMENT OF BASIS  
UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES)  
GENERAL PERMIT FOR COAL MINING OPERATIONS  
MINOR INDUSTRIAL FACILITIES RENEWAL  
UPDES PERMIT No. UTG040000**

The State of Utah in compliance with the *Utah Water Quality Act, Title 19-5 Utah Code Annotated ("UCA") 1953, as amended, the "Act"*, will issue a general permit for coal mining operations in Utah.

**APPROPRIATENESS OF THE GENERAL PERMIT**

*Utah Administrative Code (UAC) Section R317-8-2.5* authorizes the issuance of general permits to categories of point sources within the same geographical area, which involve similar types of operations, discharge the same types of wastes, and require similar effluent limitations and pollution control measures. There are currently twelve coal mining facilities that have applied for coverage under this general permit renewal. All of these twelve facilities are located in Carbon and Emery Counties.

**DESCRIPTION OF DISCHARGES**

This general permit shall apply only to discharges of mine water, ground water, treated wastewater, and/or storm water from coal mining operations located in Utah. Coal mining operations, either new or existing in Utah, which include or will include in part or in whole, alkaline mine water drainage, storm water runoff from coal preparation plant and associated areas, active mining areas, and post mining areas. The discharge of coal preparation plant process water is prohibited under this general permit. The discharge data for each of the twelve facilities has been evaluated. Many of these twelve facilities either do not discharge on a regular basis (if at all), or are generally able to meet the discharge requirements. Based on Utah Administrative Code UAC 19-5-108 a permit cannot be issued unless the applicant/permittee can meet all applicable requirements of this Chapter, including the conditions of any permit granted by the Board.

**NOTICE OF INTENT FOR COVERAGE UNDER THE COAL MINING GENERAL PERMIT**

Any facility, including those which presently have an individual UPDES permit, which desires coverage under the general permit for coal mining and meets the descriptions above, may be issued coverage by submitting a Notice of Intent (NOI). The Environmental Protection Agency Application (EPA form 3510-1) and the other NOI requirements can be obtained from:

Division of Water Quality  
195 North 1950 West  
P.O. Box 144870  
Salt Lake City, Utah 84114-4870  
(801) 536-4300  
[www.waterquality.utah.gov](http://www.waterquality.utah.gov)

The following outline for submitting a NOI is taken from *Part I.B.* of the general permit:

Any facility which desires coverage under this general permit for coal mining and meets the requirements of Part I.A. may be issued general permit coverage by submitting a Notice of Intent (NOI) to Division of Water Quality.

This can be a guide for renewal of the permit in the future, by completing the form and sending to the address above. The NOI shall include:

1. A completed Environmental Protection Agency Application (EPA Form 3510-1) or equivalent information. Only EPA form 3510-1 is required, no other EPA forms are required.
2. Location and identification number (such as 001, 002, etc.) of each existing discharge and/or proposed discharge point(s). This includes the latitude and longitude and the name of the receiving water(s).
3. A description of the source of the wastewater for each discharge point.
4. A description of the treatment given or proposed for the wastewater at each discharge point and if necessary a justification of why no treatment is required.
5. Flow characteristics for each discharge point such as whether flow is or will be continuous or intermittent and indicate projected and/or actual average and maximum flows in gallons per day (GPD), or million gallons per day (MGD).
6. Data for each discharge point for the following parameters:
  - a. Biochemical demand (BOD<sub>5</sub>).
  - b. Chemical oxygen demand (COD).
  - c. Total organic carbon (TOC).
  - d. Total suspended solids (TSS).
  - e. Flow.
  - f. Ammonia (as N).
  - g. Oil and grease.
  - h. Temperature.
  - i. pH
  - j. Total dissolved solids (TDS).
  - k. Total iron and metals, cyanide, phenols located in *Table III of UAC R317-8-3.13*.
  - l. For discharge(s) of mine water or mine water and mine water mixed with surface runoff, provide results of previous whole effluent toxicity (WET) testing or complete at least one WET test using two species and a full dilution series (five dilutions plus a control). Sediment pond discharges which have only surface runoff do not require WET tests.
  - m. Date and time of sampling for each parameter.
  - n. Date and time of analysis for each parameter.
  - o. Utah certified laboratory which has completed the analysis for each parameter.

For each discharge point the presence or absence of any toxic and/or priority pollutants as listed in *Table II, UAC R317-8-3.13*. If no data is available, indicate why the data is not available. The Executive Secretary may waive the reporting requirements for any of these pollutants and parameters if the applicant submits a request for such a waiver before or when the NOI is submitted, which demonstrates that information adequate to support issuance of the permit can be obtained through less stringent reporting requirements. Additional information or clarification of

information submitted in the NOI may be requested by the Director at any time.

Any permittee holding a general UPDES permit may request to be excluded from coverage of the general permit by applying for an individual permit. If an individual permit is issued, the applicability of the general permit is automatically terminated on the effective date of the individual permit. In addition, the Executive Secretary may require any permittee authorized by a general permit to apply for and obtain an individual UPDES permit. Cases where an individual permit may be required include those listed in *UAC R317-8-2.5(2)(c)1*.

### **BASIS FOR EFFLUENT LIMITATIONS**

In accordance with regulations promulgated in *40 Code of Federal Regulations (CFR) Part 122.44* and in *UAC R317-8-4.2*, effluent limitations are derived from technology-based effluent limitations guidelines, Utah Secondary Treatment Standards (*UAC R317-1-3.2*) or Utah Water Quality Standards (*UAC R317-2*). A waste load analysis was completed and is included as Appendix I of this FSSOB. In cases where multiple limits have been developed, those that are more stringent apply. In some cases (such as for TSS) multiple limits have been used. In cases where no limits are applicable, Best Professional Judgment (BPJ) may be used. "Best Professional Judgment" refers to a discretionary, best professional decision made by the permit writer based upon precedent, prevailing regulatory standards or other relevant information.

The total suspended solids (TSS) limitations were determined using State of Utah secondary treatment standards as contained in *UAC R317-1-3.2 B*. These standards require that the arithmetic mean shall not exceed 25 mg/L during any 30-day period or 35 mg/L during any 7-day period. The daily maximum value of 70 mg/L was taken from *40 CFR 434 Subpart D*, which is entitled *Alkaline Mine Drainage*.

The pH is limited to a minimum of 6.5 and a maximum of 9.0 standard units by State secondary treatment standards as contained in *UAC R317-1-3.2D*.

There shall be no visible sheen or oil and grease present. If sheen is visually observed or there is another reason to believe oil or grease is present in the discharge, then a sample for oil and grease is required to be taken. This sample shall be less than or equal to 10 mg/L. This requirement for oil and grease is based upon Best Professional Judgment.

The iron limitation is based upon the State Water Quality Standard of 1.0 mg/L for dissolved iron (*UAC R317-2 Table 2.14.2*) and will be included in the permit as 1.0 mg/L as total iron, and shall apply to each of the discharge points. Data from Utah coal mine discharges indicate that the permitted facilities should be able to continue complying with this limitation because either they usually do not discharge on a regular basis, or the discharge has typically been less than 1.0 mg/L.

If a facility discharges into the Colorado River Basin, TDS mass loading is limited according to policies established by the Colorado River Basin Salinity Control Forum (Forum), as authorized in *UAC R317-2-4* to further control salinity in the Utah portion of the Colorado River Basin. On February 28, 1977 the Forum produced the "*Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program*" (Policy), with the most current subsequent triennial revision dated October 2011. Based on Forum Policy, provisions can be made to remove TDS by treatment, salinity off-set projects, or whatever mechanism(s) the permittee can develop to account for any TDS loading in excess of the permit requirement. These provisions are usually incorporated in individual permits. The TDS loading required by the salinity forum is one ton per day as a sum from all discharge points, unless the concentration of TDS is 500 mg/L or less. If the concentration of TDS is less than 500 mg/L no loading limit applies. Therefore, a loading limit of one ton per day from all discharge points will be included in the permit unless the permittee can demonstrate that the concentration at all discharge points does not exceed 500 mg/L. If one ton per day cannot be achieved

and the permittee cannot meet 500 mg/L or less at all of its discharge points, then the permittee will be required to pursue an individual permit.

Based on *UAC R317-2-14, Table 2.14.1* the concentration of TDS in water used for agricultural purposes shall not exceed 1200 mg/L, unless there is a designated site specific standard for TDS which has been incorporated into the State Water Quality Standards. A reasonable potential analysis for TDS concentration was completed for all of the mines presently covered under the general coal permit. A majority of coal mines covered under the general permit has not discharged over the last five years and it is anticipated will not discharge over the next five year permit period. Of those facilities that discharged (3 out of 13) only one (Alton Coal) will be required to obtain an individual permit instead of being covered under this general coal permit renewal.

USEPA made an impairment determination for total dissolved solids for Kanab Creek-2 Assessment Unit which includes Lower Robinson Creek and Sink Valley which are the two receiving waters for discharge from Alton Coal. Any discharge from Alton Coal in exceedance of 1200 mg/L may cause or contribute to the violation of a TDS water quality standard, which is the reason Alton Coal is being required to obtain an individual permit. All of the permitted coal mines have to monitor for TDS concentration to determine loading for TDS. All mines covered under this permit will be required to report TDS concentration on their DMR report. As with the previous permit, no specific concentration for TDS will be included as a limit in this renewal permit.

For discharges composed of surface water or mine water commingled with surface water, *40 CFR Part 434.63* allows alternate effluent limits to be applied when discharges result from specific runoff events, detailed below and in the permit. The permittee has the burden of proof that the described runoff events occurred.

- i. For runoff events (rainfall or snowmelt) less than or equal to a 10-year 24-hour precipitation event, settleable solids shall be substituted for TSS and shall be limited to 0.5 milliliters per liter (ml/L). All other effluent limitations must be achieved concurrently, as described in the permit.
- ii. Any discharge or increase in the volume of a discharge caused by precipitation within any 24 hour period greater than the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) may comply with the following limitation instead of the otherwise applicable limitations:

Pollutant or pollutant property	Effluent limitations
pH	6.5-9.0 at all times.

**EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The effluent limitations and monitoring requirements shall be completed as outlined below. Effluent self-monitoring requirements are based on BPJ. Reports shall be made via NetDMR or on Discharge Monitoring Report (DMR) forms and are due 28 days after the end of the monthly monitoring period.

Effluent Characteristics	Effluent Limitations d/				Monitoring Requirements	
	30 Day Average	7 Day Average	Daily Minimum	Daily Maximum	Sample Frequency	Sample Type
Flow, 'MGD e/	1.0	NA	NA	Report	Monthly	Measured
TSS, mg/L	25	35	NA	70	Monthly	Grab f/
Total Iron, mg/L	NA	NA	NA	1.00	Monthly	Grab f/
Oil & Grease, mg/L a/	NA	NA	NA	10	Monthly	Visual
Total Dissolved Solids, mg/L	NA	NA	NA	Report	Monthly	Grab f/
Total Dissolved Solids, tons/day b/	NA	NA	NA	1.0	Monthly	Grab f/
pH, standard units	NA	NA	6.5	9.0	Monthly	Grab
Sanitary Waste c/	NA	NA	NA	None	Monthly	Visual
Oil and Grease, floating solids, visible foam, a/	NA	NA	NA	None	Monthly	Visual

*MGD: million gallons per day      NA: not applicable*

If the waters of the State into which the permittee is discharging are designated as non-attainment for any parameter, the permittee may be required to monitor for a specific parameter of concern as indicated in Part I.E.6 of the permit. Alternatively, as a result of this designation, the permittee may be required to obtain an individual permit based on *UAC R317-8-2.5(2)(c)1*.

- a/ A visual inspection for oil and grease, floating solids, and visible foam shall be performed monthly. There shall be no sheen, floating solids, or visible foam in other than trace amounts. If sheen is observed, a grab sample of the effluent shall be collected immediately thereafter and oil and grease shall not exceed 10 mg/L in concentration.
- b/ The permittee cannot discharge more than one ton per day of TDS as a sum from all discharge points. If the permittee can achieve a 500 mg/l thirty day average or less at each outfall there shall be no tonnage limit applicable. If the permittee cannot meet either of the TDS limits mentioned above in this paragraph, the permittee may be required to obtain an individual permit.
- c/ There shall be no discharge of sanitary waste and visual observations shall be performed at least monthly to verify the no such discharges occur.
- d/ See Definitions, *Part V of the permit* for definition of terms.
- e/ For intermittent discharge, the duration of the discharge shall also be reported
- f/ These samples may also be a composite sample.

**WASTE LOAD ANALYSIS AND ANTIDegradation REVIEW**

Effluent limitations are also derived using a waste load analysis (WLA), which is appended to this statement of basis as ADDENDUM. The WLA incorporates Secondary Treatment Standards, Water Quality Standards, Antidegradation Reviews (ADR), as appropriate and designated uses into a water quality model that projects the effects of discharge concentrations on receiving water quality. Effluent limitations are those that the model demonstrates are sufficient to meet State water quality standards in the receiving waters. During this UPDES permit development, a WLA and ADR I were performed. Effluent limits contained in the WLA were incorporated into the permit. This included a reasonable potential analysis based on the best professional judgment of the permit writer. An ADR Level I review was performed and concluded that an ADR Level II review was not required. The

potential discharges were evaluated and determined not to cause a violation of State Water Quality Standards in downstream receiving waters.

### **STORM WATER REQUIREMENTS**

The storm water requirements are based on the UPDES Multi-Sector General Permit (MSGP) for Storm Water Discharges for Industrial Activity, General Permit No. UTR000000. All sections of the MSGP that pertain to discharges from wastewater treatment plants have been included and sections which are redundant or do not pertain have been deleted.

The permit requires the preparation and implementation of a storm water pollution prevention plan for all areas within the confines of the plant. Required elements of this plan are:

- 1) Development of a pollution prevention team.
- 2) Development of drainage maps and material stockpiles.
- 3) An inventory of exposed material.
- 4) Spill reporting and response procedures.
- 5) A preventative maintenance program,
- 6) Employee training.
- 7) Certification that storm water discharges are not mixed with non-storm water discharges.
- 8) Compliance site evaluations and potential pollutant source identification, and
- 9) Visual examinations of storm water discharges.

This plan is required to be maintained on-site to reflect current site conditions and made available for review upon request and/or inspections.

### **PRETREATMENT REQUIREMENTS**

Those facilities covered under the general permit do not discharge process wastewater to a sanitary sewer system. Any process wastewater that these facilities may discharge to the sanitary sewer, either as a direct discharge or as a hauled waste, is subject to federal, state, and local pretreatment regulations. Pursuant to section 307 of the Clean Water Act, the permittee shall comply with all applicable federal general pretreatment regulations promulgated, found in 40 CFR 403, the state's pretreatment requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste.

### **BIOMONITORING REQUIREMENTS**

As part of a nationwide effort to control toxics, biomonitoring requirements are being included in all major permits and in minor permits for facilities where effluent toxicity is an existing or potential concern. Authorization for requiring effluent biomonitoring is provided for in UAC R317-8-4.2 and R317-8-5.3. *The Whole Effluent Toxicity (WET) Control Guidance Document*, February 15, 1991, outlines guidance to be used by Utah Division of Water Quality staff and by permittees for implementation of WET control through the UPDES discharge permit program.

The coal mining operations covered under this general permit are categorized as minor industrial facilities, from which the discharges of mine water and storm water runoff is neither considered to be, nor likely to be toxic. Therefore, biomonitoring of the effluent will not be required. A toxicity reopener provision will be included in the permit so that WET testing and WET limitation requirements can be incorporated at any time if determined to be appropriate in the future.

**SIGNIFICANT CHANGES FROM PREVIOUS PERMIT**

A flow limit of 1.0 MGD was added for when discharges do occur. This flow limit is the largest average flow expected at any of the coal mines applying for coverage under the General Permit for Coal Mining.

**PERMIT DURATION**

As stated in UAC R317-8-5.1(1), UPDES permit shall be effective for a fixed term not to exceed five years.

Drafted by Mike Herkimer, Environmental Scientist  
Utah Division of Water Quality  
March 14, 2013

The Fact Sheet and Statement of Basis, wasteload allocation and proposed permit were public noticed in the Emery County Progress and the Sun Advocate, and under "Public Participation" on the Division of Water Quality Web Site, [www.waterquality.utah.gov/](http://www.waterquality.utah.gov/) from March 26, 2013 through April 26, 2013. No comments were received.

Permit Writer: Mike Herkimer

Date: 8/7/13

Utah Division of Water Quality  
Salt Lake City, Utah

**WASTELOAD ANALYSIS [WLA]**  
**Addendum: Statement of Basis**  
**SUMMARY**

**Discharging Facility:** General Coal Mine Permit  
UPDES No: UT-G040000  
Current Flow: 1.00 MGD Design Flow  
Design Flow 1.00 MGD

**Receiving Water:** ephemeral/ intermittent

Stream Classification: 2, 2B, 3A, 4  
Stream Flows [cfs]:  
0.0 Summer (July-Sept) Ephemeral wash  
0.0 Fall (Oct-Dec) Ephemeral wash  
0.0 Winter (Jan-Mar) Ephemeral wash  
0.0 Spring (Apr-June) Ephemeral wash  
0.0 Average  
Stream TDS Values:  
500.0 Summer (July-Sept) Water Quality Data  
500.0 Fall (Oct-Dec) Water Quality Data  
500.0 Winter (Jan-Mar) Water Quality Data  
500.0 Spring (Apr-June) Water Quality Data

**Effluent Limits:**

Flow, MGD: 1.00 MGD Design Flow  
BOD, mg/l: 25.0 Summer 5.0 Indicator  
Dissolved Oxygen, mg/l: 5.0 Summer 6.5 30 Day Average  
TNH<sub>3</sub>, Chronic, mg/l: 4.3 Summer Varies Function of pH and Temperature  
TDS, mg/l: 1200.5 Summer 1200.0

**WQ Standard:**

**Modeling Parameters:**

Acute River Width: 50.0%  
Chronic River Width: 100.0%

Antidegradation Level II Review is required for discharges to 1C Drinking water sources.

Date: 1/30/2013

Permit Writer:

WLA by:

WQM Sec. Approval:

TMDL Sec. Approval:

Neil M. Olson 1-30-13  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Utah Division of Water Quality  
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]  
Addendum: Statement of Basis

30-Jan-13
4:00 PM

Facilities: General Coal Mine Permit  
Discharging to: ephemeral/ intermittent

UPDES No: UT-G040000

I. Introduction

Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and procedures are also considered. The primary in-stream parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), un-ionized ammonia (as a function of pH and temperature, measured and evaluated in terms of total ammonia), and dissolved oxygen.

Mathematical water quality modeling is employed to determine stream quality response to point source discharges. Models aid in the effort of anticipating stream quality at future effluent flows at critical environmental conditions (e.g., low stream flow, high temperature, high pH, etc).

The numeric criteria in this wasteload analysis may always be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

II. Receiving Water and Stream Classification

ephemeral/ intermittent:	1C, 2B, 3A, 4
Antidegradation Review:	Antidegradation Level II Review is required for discharges to 1C

III. Numeric Stream Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	6.50 mg/l (30 Day Average) 5.00 mg/l (7Day Average) 4.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

Acute and Chronic Heavy Metals (Dissolved)

**Utah Division of Water Quality  
Salt Lake City, Utah**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aluminum	87.00 ug/l**	0.725 lbs/day	750.00	ug/l	6.254 lbs/day
Arsenic	190.00 ug/l	1.584 lbs/day	340.00	ug/l	2.835 lbs/day
Cadmium	0.61 ug/l	0.005 lbs/day	6.52	ug/l	0.054 lbs/day
Chromium III	211.92 ug/l	1.767 lbs/day	4433.71	ug/l	36.970 lbs/day
ChromiumVI	11.00 ug/l	0.092 lbs/day	16.00	ug/l	0.133 lbs/day
Copper	23.85 ug/l	0.199 lbs/day	39.41	ug/l	0.329 lbs/day
Iron			1000.00	ug/l	8.338 lbs/day
Lead	12.88 ug/l	0.107 lbs/day	330.60	ug/l	2.757 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.020 lbs/day
Nickel	132.13 ug/l	1.102 lbs/day	1188.44	ug/l	9.910 lbs/day
Selenium	4.60 ug/l	0.038 lbs/day	20.00	ug/l	0.167 lbs/day
Silver	N/A ug/l	N/A lbs/day	25.04	ug/l	0.209 lbs/day
Zinc	303.93 ug/l	2.534 lbs/day	303.93	ug/l	2.534 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO3

Metals Standards Based upon a Hardness of 300 mg/l as CaCO3

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aldrin			1.500	ug/l	0.013 lbs/day
Chlordane	0.004 ug/l	0.036 lbs/day	1.200	ug/l	0.010 lbs/day
DDT, DDE	0.001 ug/l	0.008 lbs/day	0.550	ug/l	0.005 lbs/day
Dieldrin	0.002 ug/l	0.016 lbs/day	1.250	ug/l	0.010 lbs/day
Endosulfan	0.056 ug/l	0.467 lbs/day	0.110	ug/l	0.001 lbs/day
Endrin	0.002 ug/l	0.019 lbs/day	0.090	ug/l	0.001 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.032 lbs/day	0.260	ug/l	0.002 lbs/day
Lindane	0.080 ug/l	0.667 lbs/day	1.000	ug/l	0.008 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.000 lbs/day
PCB's	0.014 ug/l	0.117 lbs/day	2.000	ug/l	0.017 lbs/day
Pentachlorophenol	13.00 ug/l	108.468 lbs/day	20.000	ug/l	0.167 lbs/day
Toxephene	0.0002 ug/l	0.002 lbs/day	0.7300	ug/l	0.006 lbs/day

**IV. Numeric Stream Standards for Protection of Agriculture**

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	3.13 lbs/day
Cadmium			10.0 ug/l	0.04 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day

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Lead	100.0 ug/l	lbs/day
Selenium	50.0 ug/l	lbs/day
TDS, Summer	1200.0 mg/l	5.00 tons/day

**V. Numeric Stream Standards for Protection of Human Health (Class 1C Waters)**

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			50.0 ug/l	0.417 lbs/day
Barium			1000.0 ug/l	8.344 lbs/day
Cadmium			10.0 ug/l	0.083 lbs/day
Chromium			50.0 ug/l	0.417 lbs/day
Lead			50.0 ug/l	0.417 lbs/day
Mercury			2.0 ug/l	0.017 lbs/day
Selenium			10.0 ug/l	0.083 lbs/day
Silver			50.0 ug/l	0.417 lbs/day
Fluoride (3)			1.4 ug/l	0.012 lbs/day
to			2.4 ug/l	0.020 lbs/day
Nitrates as N			10.0 ug/l	0.083 lbs/day

**Chlorophenoxy Herbicides**

2,4-D	100.0 ug/l	0.834 lbs/day
2,4,5-TP	10.0 ug/l	0.083 lbs/day
Endrin	0.2 ug/l	0.002 lbs/day
cyclohexane (Lindane)	4.0 ug/l	0.033 lbs/day
Methoxychlor	100.0 ug/l	0.834 lbs/day
Toxaphene	5.0 ug/l	0.042 lbs/day

**VI. Numeric Stream Standards the Protection of Human Health from Water & Fish Consumption [Toxics]**

Toxic Organics	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	1200.00 ug/l	10.01 lbs/day	2700.0 ug/l	22.53 lbs/day
Acrolein	320.00 ug/l	2.67 lbs/day	780.0 ug/l	6.51 lbs/day
Acrylonitrile	0.06 ug/l	0.00 lbs/day	0.7 ug/l	0.01 lbs/day
Benzene	1.20 ug/l	0.01 lbs/day	71.0 ug/l	0.59 lbs/day
Benzidine	0.00012 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	0.25 ug/l	0.00 lbs/day	4.4 ug/l	0.04 lbs/day
Chlorobenzene	680.00 ug/l	5.67 lbs/day	21000.0 ug/l	175.22 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	0.00075 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	0.38 ug/l	0.00 lbs/day	99.0 ug/l	0.83 lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	1.90 ug/l	0.02 lbs/day	8.9 ug/l	0.07 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	0.61 ug/l	0.01 lbs/day	42.0 ug/l	0.35 lbs/day
1,1,2,2-Tetrachloroethane	0.17 ug/l	0.00 lbs/day	11.0 ug/l	0.09 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	0.03 ug/l	0.00 lbs/day	1.4 ug/l	0.01 lbs/day
2-Chloroethyl vinyl ether	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day

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2-Chloronaphthalene	1700.00 ug/l	14.18 lbs/day	4300.0 ug/l	35.88 lbs/day
2,4,6-Trichlorophenol	2.10 ug/l	0.02 lbs/day	6.5 ug/l	0.05 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	5.70 ug/l	0.05 lbs/day	470.0 ug/l	3.92 lbs/day
2-Chlorophenol	120.00 ug/l	1.00 lbs/day	400.0 ug/l	3.34 lbs/day
1,2-Dichlorobenzene	2700.00 ug/l	22.53 lbs/day	17000.0 ug/l	141.84 lbs/day
1,3-Dichlorobenzene	400.00 ug/l	3.34 lbs/day	2600.0 ug/l	21.69 lbs/day
1,4-Dichlorobenzene	400.00 ug/l	3.34 lbs/day	2600.0 ug/l	21.69 lbs/day
3,3'-Dichlorobenzidine	0.04 ug/l	0.00 lbs/day	0.1 ug/l	0.00 lbs/day
1,1-Dichloroethylene	0.06 ug/l	0.00 lbs/day	3.2 ug/l	0.03 lbs/day
1,2-trans-Dichloroethylene	700.00 ug/l	5.84 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	93.00 ug/l	0.78 lbs/day	790.0 ug/l	6.59 lbs/day
1,2-Dichloropropane	0.52 ug/l	0.00 lbs/day	39.0 ug/l	0.33 lbs/day
1,3-Dichloropropylene	10.00 ug/l	0.08 lbs/day	1700.0 ug/l	14.18 lbs/day
2,4-Dimethylphenol	540.00 ug/l	4.51 lbs/day	2300.0 ug/l	19.19 lbs/day
2,4-Dinitrotoluene	0.11 ug/l	0.00 lbs/day	9.1 ug/l	0.08 lbs/day
2,6-Dinitrotoluene	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	0.04 ug/l	0.00 lbs/day	0.5 ug/l	0.00 lbs/day
Ethylbenzene	3100.00 ug/l	25.87 lbs/day	29000.0 ug/l	241.97 lbs/day
Fluoranthene	300.00 ug/l	2.50 lbs/day	370.0 ug/l	3.09 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	1400.00 ug/l	11.68 lbs/day	170000.0 ug/l	1418.43 lbs/day
Bis(2-chloroethoxy) met	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	4.70 ug/l	0.04 lbs/day	1600.0 ug/l	13.35 lbs/day
Methyl chloride (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	4.30 ug/l	0.04 lbs/day	360.0 ug/l	3.00 lbs/day
Dichlorobromomethane	0.27 ug/l	0.00 lbs/day	22.0 ug/l	0.18 lbs/day
Chlorodibromomethane	0.41 ug/l	0.00 lbs/day	34.0 ug/l	0.28 lbs/day
Hexachlorobutadiene(c)	0.44 ug/l	0.00 lbs/day	50.0 ug/l	0.42 lbs/day
Hexachlorocyclopentadi	240.00 ug/l	2.00 lbs/day	17000.0 ug/l	141.84 lbs/day
Isophorone	8.40 ug/l	0.07 lbs/day	600.0 ug/l	5.01 lbs/day
Naphthalene				
Nitrobenzene	17.00 ug/l	0.14 lbs/day	1900.0 ug/l	15.85 lbs/day
2-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	70.00 ug/l	0.58 lbs/day	14000.0 ug/l	116.81 lbs/day
4,6-Dinitro-o-cresol	13.00 ug/l	0.11 lbs/day	765.0 ug/l	6.38 lbs/day
N-Nitrosodimethylamine	0.00069 ug/l	0.00 lbs/day	8.1 ug/l	0.07 lbs/day
N-Nitrosodiphenylamine	5.00 ug/l	0.04 lbs/day	16.0 ug/l	0.13 lbs/day
N-Nitrosodi-n-propylami	0.01 ug/l	0.00 lbs/day	1.4 ug/l	0.01 lbs/day
Pentachlorophenol	0.28 ug/l	0.00 lbs/day	8.2 ug/l	0.07 lbs/day
Phenol	2.10E+04 ug/l	1.75E+02 lbs/day	4.6E+06 ug/l	3.84E+04 lbs/day
Bis(2-ethylhexyl)phthala	1.80 ug/l	0.02 lbs/day	5.9 ug/l	0.05 lbs/day
Butyl benzyl phthalate	3000.00 ug/l	25.03 lbs/day	5200.0 ug/l	43.39 lbs/day
Di-n-butyl phthalate	2700.00 ug/l	22.53 lbs/day	12000.0 ug/l	100.12 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	23000.00 ug/l	191.91 lbs/day	120000.0 ug/l	1001.25 lbs/day
Dimethyl phthlate	3.13E+05 ug/l	2.61E+03 lbs/day	2.9E+06 ug/l	2.42E+04 lbs/day
Benzo(a)anthracene (P)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day

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Benzo(a)pyrene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (F)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (F)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Chrysene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	9600.00 ug/l	80.10 lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Pyrene (PAH)	960.00 ug/l	8.01 lbs/day	11000.0 ug/l	91.78 lbs/day
Tetrachloroethylene	0.80 ug/l	0.01 lbs/day	8.9 ug/l	0.07 lbs/day
Toluene	6800.00 ug/l	56.74 lbs/day	200000.0 ug/l	1668.74 lbs/day
Trichloroethylene	2.70 ug/l	0.02 lbs/day	81.0 ug/l	0.68 lbs/day
Vinyl chloride	2.00 ug/l	0.02 lbs/day	525.0 ug/l	4.38 lbs/day
			0.0	0.00 lbs/day
			0.0	0.00 lbs/day
<b>Pesticides</b>				
Aldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	0.0008 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	0.9300 ug/l	0.01 lbs/day	2.0 ug/l	0.02 lbs/day
beta-Endosulfan	0.9300 ug/l	0.01 lbs/day	2.0 ug/l	0.02 lbs/day
Endosulfan sulfate	0.9300 ug/l	0.01 lbs/day	2.0 ug/l	0.02 lbs/day
Endrin	0.7600 ug/l	0.01 lbs/day	0.8 ug/l	0.01 lbs/day
Endrin aldehyde	0.7600 ug/l	0.01 lbs/day	0.8 ug/l	0.01 lbs/day
Heptachlor	0.0002 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 1242)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 1254)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 1221)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 1232)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 1248)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 1260)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 1016)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	0.000750 ug/l	0.00	0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	1.30E-08 ug/l	0.00 lbs/day	1.40E-08	0.00
<b>Metals</b>				
Antimony	14.0 ug/l	0.12 lbs/day		
Arsenic	50.0 ug/l	0.42 lbs/day	4300.00 ug/l	35.88 lbs/day
Asbestos	7.00E+06 ug/l	5.84E+04 lbs/day		
Beryllium				
Cadmium				

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Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	1.30E+03 ug/l	10.85 lbs/day	2.2E+05 ug/l	1835.62 lbs/day
Lead	700.0 ug/l	5.84 lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	38.38 lbs/day
Selenium	0.1 ug/l	0.00 lbs/day		
Silver	610.0 ug/l	5.09 lbs/day		
Thallium			6.30 ug/l	0.05 lbs/day
Zinc				

**There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.**

### **VII. Mathematical Modeling of Stream Quality**

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

(1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).

(2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.

(3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8

(4) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

Coefficients used in the model were based, in part, upon the following references:

(1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.

(2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

### **VIII. Modeling Information**

The required information for the model may include the following information for both the upstream conditions at low flow and the effluent conditions:

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Flow, Q, (cfs or MGD)	D.O. mg/l
Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

**Other Conditions**

In addition to the upstream and effluent conditions, the models require a variety of physical and biological coefficients and other technical information. In the process of actually establishing the permit limits for an effluent, values are used based upon the available data, model calibration, literature values, site visits and best professional judgement.

**Model Inputs**

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

**Current Upstream Information**

	<b>Stream Critical</b>								
	<b>Low Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>	
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	
Summer (Irrig. Season)	0.0	20.0	8.2	0.10	0.50	10.96	0.00	500.0	
Fall	0.0	12.0	8.1	0.10	0.50	---	0.00	500.0	
Winter	0.0	4.0	8.0	0.10	0.50	---	0.00	500.0	
Spring	0.0	12.0	8.1	0.10	0.50	---	0.00	500.0	
Dissolved Metals	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l	
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*	
Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l			
All Seasons	0.0000	0.53*	1.06*	0.1*	0.053*	10.0		* 1/2 MDL	

**Projected Discharge Information**

<b>Season</b>	<b>Flow, MGD</b>	<b>Temp.</b>	<b>TDS mg/l</b>	<b>TDS tons/day</b>
Summer	1.00000	17.0	500.00	2.08458
Fall	1.00000	15.0		
Winter	1.00000	12.0		
Spring	1.00000	15.0		

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

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**IX. Effluent Limitations**

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort coincide with the environmental conditions expected at low stream flows.

**Effluent Limitation for Flow based upon Water Quality Standards**

In-stream criteria of downstream segments will be met with an effluent flow maximum value as follows:

Season	Daily Average	
Summer	1.000 MGD	1.547 cfs
Fall	1.000 MGD	1.547 cfs
Winter	1.000 MGD	1.547 cfs
Spring	1.000 MGD	1.547 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 1 MGD. If the discharger is allowed to have a flow greater than 1 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

**Effluent Limitation for Whole Effluent Toxicity (WET) based upon WET Policy**

Effluent Toxicity will not occur in downstream segments if the values below are met.

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	99.9% Effluent	[Chronic]

**Effluent Limitation for Biological Oxygen Demand (BOD) based upon Water Quality Standards or Regulations**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent BOD limitation as follows:

Season	Concentration	
Summer	25.0 mg/l as BOD5	208.5 lbs/day
Fall	25.0 mg/l as BOD5	208.5 lbs/day
Winter	25.0 mg/l as BOD5	208.5 lbs/day
Spring	25.0 mg/l as BOD5	208.5 lbs/day

**Effluent Limitation for Dissolved Oxygen (DO) based upon Water Quality Standards**

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In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent D.O. limitation as follows:

Season	Concentration
Summer	5.00
Fall	5.00
Winter	5.00
Spring	5.00

**Effluent Limitation for Total Ammonia based upon Water Quality Standards**

In-stream criteria of downstream segments for Total Ammonia will be met with an effluent limitation (expressed as Total Ammonia as N) as follows:

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	4.3 mg/l as N	35.5 lbs/day
	1 Hour Avg. - Acute	13.7 mg/l as N	114.2 lbs/day
Fall	4 Day Avg. - Chronic	4.7 mg/l as N	38.9 lbs/day
	1 Hour Avg. - Acute	13.6 mg/l as N	113.5 lbs/day
Winter	4 Day Avg. - Chronic	4.6 mg/l as N	38.5 lbs/day
	1 Hour Avg. - Acute	12.1 mg/l as N	100.9 lbs/day
Spring	4 Day Avg. - Chronic	4.7 mg/l as N	38.9 lbs/day
	1 Hour Avg. - Acute	13.6 mg/l as N	113.5 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.%.

**Effluent Limitation for Total Residual Chlorine based upon Water Quality Standards**

In-stream criteria of downstream segments for Total Residual Chlorine will be met with an effluent limitation as follows:

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	0.011 mg/l	0.09 lbs/day
	1 Hour Avg. - Acute	0.019 mg/l	0.16 lbs/day
Fall	4 Day Avg. - Chronic	0.011 mg/l	0.09 lbs/day
	1 Hour Avg. - Acute	0.019 mg/l	0.16 lbs/day
Winter	4 Day Avg. - Chronic	0.011 mg/l	0.09 lbs/day
	1 Hour Avg. - Acute	0.019 mg/l	0.16 lbs/day
Spring	4 Day Avg. - Chronic	0.011 mg/l	0.09 lbs/day
	1 Hour Avg. - Acute	0.019 mg/l	0.16 lbs/day

**Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards**

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Season		Concentration		Load	
Summer	Maximum, Acute	1200.5	mg/l	5.00	tons/day
Fall	Maximum, Acute	1200.5	mg/l	5.00	tons/day
Winter	Maximum, Acute	1200.5	mg/l	5.00	tons/day
Spring	4 Day Avg. - Chronic	1200.5	mg/l	5.00	tons/day

Colorado Salinity Form Limits      Determined by Permitting Section

**Effluent Limitations for Total Recoverable Metals based upon  
Water Quality Standards**

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 300 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	750.5	ug/l	6.3 lbs/day
Arsenic	190.12 ug/l	1.0 lbs/day	340.2	ug/l	2.8 lbs/day
Cadmium	0.61 ug/l	0.0 lbs/day	6.5	ug/l	0.1 lbs/day
Chromium III	212.05 ug/l	1.1 lbs/day	4,436.6	ug/l	37.0 lbs/day
Chromium VI	11.00 ug/l	0.1 lbs/day	16.0	ug/l	0.1 lbs/day
Copper	23.87 ug/l	0.1 lbs/day	39.4	ug/l	0.3 lbs/day
Iron	N/A	N/A	1,000.6	ug/l	8.3 lbs/day
Lead	12.89 ug/l	0.1 lbs/day	330.8	ug/l	2.8 lbs/day
Mercury	0.01 ug/l	0.0 lbs/day	2.4	ug/l	0.0 lbs/day
Nickel	132.22 ug/l	0.7 lbs/day	1,189.2	ug/l	9.9 lbs/day
Selenium	4.60 ug/l	0.0 lbs/day	20.0	ug/l	0.2 lbs/day
Silver	N/A ug/l	N/A lbs/day	25.1	ug/l	0.2 lbs/day
Zinc	304.13 ug/l	1.6 lbs/day	304.1	ug/l	2.5 lbs/day
Cyanide	5.20 ug/l	0.0 lbs/day	22.0	ug/l	0.2 lbs/day

**Effluent Limitations for Heat/Temperature based upon  
Water Quality Standards**

Summer	22.0 Deg. C.	71.6 Deg. F
Fall	14.0 Deg. C.	57.2 Deg. F
Winter	6.0 Deg. C.	42.8 Deg. F
Spring	14.0 Deg. C.	57.2 Deg. F

**Effluent Limitations for Organics [Pesticides]  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Organics [Pesticides] will be met with an effluent limit as follows:

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	4 Day Average		1 Hour Average		
	Concentration	Load	Concentration	Load	
Aldrin			1.5E+00	ug/l	1.93E-02 lbs/day
Chlordane	4.30E-03 ug/l	3.59E-02 lbs/day	1.2E+00	ug/l	1.55E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	8.34E-03 lbs/day	5.5E-01	ug/l	7.09E-03 lbs/day
Dieldrin	1.90E-03 ug/l	1.58E-02 lbs/day	1.3E+00	ug/l	1.61E-02 lbs/day
Endosulfan	5.60E-02 ug/l	4.67E-01 lbs/day	1.1E-01	ug/l	1.42E-03 lbs/day
Endrin	2.30E-03 ug/l	1.92E-02 lbs/day	9.0E-02	ug/l	1.16E-03 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	1.29E-04 lbs/day
Heptachlor	3.80E-03 ug/l	3.17E-02 lbs/day	2.6E-01	ug/l	3.35E-03 lbs/day
Lindane	8.00E-02 ug/l	6.67E-01 lbs/day	1.0E+00	ug/l	1.29E-02 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	3.87E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	1.29E-04 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	5.16E-04 lbs/day
PCB's	1.40E-02 ug/l	1.17E-01 lbs/day	2.0E+00	ug/l	2.58E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	1.08E-02 lbs/day	2.0E+01	ug/l	2.58E-01 lbs/day
Toxephene	2.00E-04 ug/l	1.67E-03 lbs/day	7.3E-01	ug/l	9.42E-03 lbs/day

**Effluent Targets for Pollution Indicators  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Pollution Indicators would be met by achieving the following effluent targets

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	41.7 lbs/day
Nitrates as N	4.0 mg/l	33.4 lbs/day
Total Phosphorus as P	0.05 mg/l	0.4 lbs/day
Total Suspended Solids	90.0 mg/l	750.4 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule]  
Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

Toxic Organics	Maximum Concentration	
	Concentration	Load
Acenaphthene	1.20E+03 ug/l	1.00E+01 lbs/day
Acrolein	3.20E+02 ug/l	2.67E+00 lbs/day
Acrylonitrile	5.90E-02 ug/l	4.92E-04 lbs/day
Benzene	1.20E+00 ug/l	1.00E-02 lbs/day
Benzidine	ug/l	lbs/day

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Carbon tetrachloride	2.50E-01 ug/l	2.09E-03 lbs/day
Chlorobenzene	6.80E+02 ug/l	5.67E+00 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	7.50E-04 ug/l	6.26E-06 lbs/day
1,2-Dichloroethane	3.80E-01 ug/l	3.17E-03 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	1.90E+00 ug/l	1.59E-02 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	6.10E-01 ug/l	5.09E-03 lbs/day
1,1,2,2-Tetrachloroethane	1.70E-01 ug/l	1.42E-03 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	3.10E-02 ug/l	2.59E-04 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	1.70E+03 ug/l	1.42E+01 lbs/day
2,4,6-Trichlorophenol	2.10E+00 ug/l	1.75E-02 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	5.70E+00 ug/l	4.76E-02 lbs/day
2-Chlorophenol	1.20E+02 ug/l	1.00E+00 lbs/day
1,2-Dichlorobenzene	2.70E+03 ug/l	2.25E+01 lbs/day
1,3-Dichlorobenzene	4.00E+02 ug/l	3.34E+00 lbs/day
1,4-Dichlorobenzene	4.00E+02 ug/l	3.34E+00 lbs/day
3,3'-Dichlorobenzidine	4.00E-02 ug/l	3.34E-04 lbs/day
1,1-Dichloroethylene	5.70E-02 ug/l	4.76E-04 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	9.31E+01 ug/l	7.76E-01 lbs/day
1,2-Dichloropropane	5.20E-01 ug/l	4.34E-03 lbs/day
1,3-Dichloropropylene	1.00E+01 ug/l	8.34E-02 lbs/day
2,4-Dimethylphenol	5.40E+02 ug/l	4.51E+00 lbs/day
2,4-Dinitrotoluene	1.10E-01 ug/l	9.18E-04 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	4.00E-02 ug/l	3.34E-04 lbs/day
Ethylbenzene	3.10E+03 ug/l	2.59E+01 lbs/day
Fluoranthene	3.00E+02 ug/l	2.50E+00 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.40E+03 ug/l	1.17E+01 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	4.70E+00 ug/l	3.92E-02 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	4.30E+00 ug/l	3.59E-02 lbs/day
Dichlorobromomethane(HM)	2.70E-01 ug/l	2.25E-03 lbs/day
Chlorodibromomethane (HM)	4.10E-01 ug/l	3.42E-03 lbs/day
Hexachlorocyclopentadiene	2.40E+02 ug/l	2.00E+00 lbs/day
Isophorone	8.41E+00 ug/l	7.01E-02 lbs/day
Naphthalene		
Nitrobenzene	1.70E+01 ug/l	1.42E-01 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	7.00E+01 ug/l	5.84E-01 lbs/day
4,6-Dinitro-o-cresol	1.30E+01 ug/l	1.08E-01 lbs/day

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N-Nitrosodimethylamine	6.90E-04 ug/l	5.76E-06 lbs/day
N-Nitrosodiphenylamine	5.00E+00 ug/l	4.17E-02 lbs/day
N-Nitrosodi-n-propylamine	5.00E-03 ug/l	4.17E-05 lbs/day
Pentachlorophenol	2.80E-01 ug/l	2.34E-03 lbs/day
Phenol	2.10E+04 ug/l	1.75E+02 lbs/day
Bis(2-ethylhexyl)phthalate	1.80E+00 ug/l	1.50E-02 lbs/day
Butyl benzyl phthalate	3.00E+03 ug/l	2.50E+01 lbs/day
Di-n-butyl phthalate	2.70E+03 ug/l	2.25E+01 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	2.30E+04 ug/l	1.92E+02 lbs/day
Dimethyl phthlate	3.13E+05 ug/l	2.61E+03 lbs/day
Benzo(a)anthracene (PAH)	2.80E-03 ug/l	2.34E-05 lbs/day
Benzo(a)pyrene (PAH)	2.80E-03 ug/l	2.34E-05 lbs/day
Benzo(b)fluoranthene (PAH)	2.80E-03 ug/l	2.34E-05 lbs/day
Benzo(k)fluoranthene (PAH)	2.80E-03 ug/l	2.34E-05 lbs/day
Chrysene (PAH)	2.80E-03 ug/l	2.34E-05 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	2.80E-03 ug/l	2.34E-05 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	2.80E-03 ug/l	2.34E-05 lbs/day
Pyrene (PAH)	9.61E+02 ug/l	8.01E+00 lbs/day
Tetrachloroethylene	8.01E-01 ug/l	6.67E-03 lbs/day
Toluene	6.80E+03 ug/l	5.67E+01 lbs/day
Trichloroethylene	2.70E+00 ug/l	2.25E-02 lbs/day
Vinyl chloride	2.00E+00 ug/l	1.67E-02 lbs/day
<b>Pesticides</b>		
Aldrin	1.30E-04 ug/l	1.08E-06 lbs/day
Dieldrin	1.40E-04 ug/l	1.17E-06 lbs/day
Chlordane	5.70E-04 ug/l	4.76E-06 lbs/day
4,4'-DDT	5.90E-04 ug/l	4.92E-06 lbs/day
4,4'-DDE	5.90E-04 ug/l	4.92E-06 lbs/day
4,4'-DDD	8.31E-04 ug/l	6.93E-06 lbs/day
alpha-Endosulfan	9.31E-01 ug/l	7.76E-03 lbs/day
beta-Endosulfan	9.31E-01 ug/l	7.76E-03 lbs/day
Endosulfan sulfate	9.31E-01 ug/l	7.76E-03 lbs/day
Endrin	7.60E-01 ug/l	6.34E-03 lbs/day
Endrin aldehyde	7.60E-01 ug/l	6.34E-03 lbs/day
Heptachlor	2.10E-04 ug/l	1.75E-06 lbs/day
Heptachlor epoxide		
<b>PCB's</b>		
PCB 1242 (Arochlor 1242)	4.40E-05 ug/l	3.67E-07 lbs/day
PCB-1254 (Arochlor 1254)	4.40E-05 ug/l	3.67E-07 lbs/day
PCB-1221 (Arochlor 1221)	4.40E-05 ug/l	3.67E-07 lbs/day
PCB-1232 (Arochlor 1232)	4.40E-05 ug/l	3.67E-07 lbs/day
PCB-1248 (Arochlor 1248)	4.40E-05 ug/l	3.67E-07 lbs/day
PCB-1260 (Arochlor 1260)	4.40E-05 ug/l	3.67E-07 lbs/day
PCB-1016 (Arochlor 1016)	4.40E-05 ug/l	3.67E-07 lbs/day

**Pesticide**

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Toxaphene	7.30E-04 ug/l	6.09E-06 lbs/day
<b>Metals</b>		
Antimony	14.01 ug/l	0.12 lbs/day
Arsenic	50.03 ug/l	0.42 lbs/day
Asbestos	7.00E+06 ug/l	5.84E+04 lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	1300.84 ug/l	10.85 lbs/day
Cyanide	700.45 ug/l	5.84 lbs/day
Lead	0.00	0.00
Mercury	0.14 ug/l	0.00 lbs/day
Nickel	610.39 ug/l	5.09 lbs/day
Selenium	0.00	0.00
Silver	0.00	0.00
Thallium	1.70 ug/l	0.01 lbs/day
Zinc		
<b>Dioxin</b>		
Dioxin (2,3,7,8-TCDD)	1.30E-08 ug/l	1.08E-10 lbs/day

**Metals Effluent Limitations for Protection of All Beneficial Uses  
Based upon Water Quality Standards and Toxics Rule**

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		750.5				750.5	N/A
Antimony			14.0	4302.8		14.0	
Arsenic	100.1	340.2	50.0		0.0	50.0	190.1
Barium					1000.6	1000.6	
Beryllium						0.0	
Cadmium	10.0	6.5			0.0	6.5	0.6
Chromium (III)		4436.6			0.0	4436.6	212.1
Chromium (VI)	100.1	16.0			0.0	16.01	11.00
Copper	200.1	39.4	1300.8			39.4	23.9
Cyanide		22.0	220142.2			22.0	5.2
Iron		1000.6				1000.6	
Lead	100.1	330.8			0.0	100.1	12.9
Mercury		2.40	0.1	0.15	0.0	0.14	0.012
Nickel		1189.2	610.4	4603.0		610.4	132.2
Selenium	50.0	20.0			0.0	20.0	4.6
Silver		25.1			0.0	25.1	

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Thallium		1.7	6.3	1.7	
Zinc	304.1			304.1	304.1
Boron	750.5			750.5	

**Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]**

[If Acute is more stringent than Chronic, then the Chronic takes on the Acute value.]

	WLA Acute ug/l	WLA Chronic ug/l	
Aluminum	750.5	N/A	
Antimony	14.01		
Arsenic	50.0	190.1	Acute Controls
Asbestos	7.00E+06		
Barium			
Beryllium			
Cadmium	6.5	0.6	
Chromium (III)	4436.6	212	
Chromium (VI)	16.0	11.0	
Copper	39.4	23.9	
Cyanide	22.0	5.2	
Iron	1000.6		
Lead	100.1	12.9	
Mercury	0.140	0.012	
Nickel	610.4	132	
Selenium	20.0	4.6	
Silver	25.1	N/A	
Thallium	1.7		
Zinc	304.1	304.1	
Boron	750.48		

Other Effluent Limitations are based upon R317-1.

E. coli                      126.0 organisms per 100 ml

**X. Antidegradation Considerations**

The Utah Antidegradation Policy allows for degradation of existing quality where it is determined that such lowering of water quality is necessary to accommodate important economic or social development in the area in which the waters are protected [R317-2-3]. It has been determined that certain chemical parameters introduced by this discharge will cause an increase of the concentration of said parameters in the receiving waters. Under no conditions will the increase in concentration be allowed to interfere with existing instream water uses.

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the

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receiving water. Based upon that review, it has been determined that an **Antidegradation Level II Review** is required for discharges to 1C Drinking water sources.

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value.

**XII. Summary Comments**

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important downstream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

**XIII. Notice of UPDES Requirement**

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information. Permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations provided that the values in this wasteload analysis [TMDL] are not compromised.

David Wham  
Utah Division of Water Quality  
801-538-6052  
File Name: General\_Coal\_Permit.xls

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 2.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 0.806	REAER. Coeff. (Ka)20 (Ka)/day 3060.102	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 1913.360	NBOD Coeff. (Kn)20 1/day 0.400	NBOD Coeff. (Kn)T 1/day 0.087
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 1.611	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 10.095
BENTHIC DEMAND	BENTHIC DEMAND						

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(SOD)20	(SOD)T
gm/m2/day	gm/m2/day
1.000	0.287

K1	K2	K3	K4	K5	K6	K(Cl)	S
CBOD	Reaer.	NH3	Open	NH3 Loss	NO2+3	TRC	Benthic
{theta}	{theta}	{theta}	{theta}	{theta}	{theta}	{theta}	{theta}
1.0	1.0	1.1	1.0	1.0	1.0	1.1	1.1

Wildcat Loadout C/007/033

Bond Amount Rev. May 2014

Direct Costs

Subtotal Demolition and Grading	\$435,751
Subtotal Backfilling and Grading	\$304,438
Subtotal Revegetation	\$295,093
Subtotal Direct Costs	<u>\$1,035,281</u>

Indirect Costs

Mob/Demob	\$103,528	10.0%
Contingency	\$51,764	5.0%
Engineering Redesign	\$25,882	2.5%
Main Office Expense	\$70,399	6.8%
Project Management Fee	\$25,882	2.5%
Subtotal Indirect Costs	<u>\$277,455</u>	

Total Cost \$1,312,737

Escalation Factor		0.015
Number of Years		2
Escalation	<u>\$39,677</u>	

Reclamation Cost. \$1,352,414

Bond Amount (round to nearest \$1,000)  
in 2016 dollars \$1,352,000

Cost Factors

Means Number	Material	Unit Cost	Units
02 41 16.13 0100	Mixture of types, average	0.30	CF
Concrete Demo1	Concrete Demolition		7 CY
31 23 16.42 1300	Front End Loader 3 CY	1.67	CY
31 23 23.20 1014	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	2.95	CY
02 41 16.17 4200	On Site Disposal	8.65	CY
City Sanitation Price	City Sanitation		4 CY
02 41 16.13 0012	Steel Bld. Large	0.27	CY
	Utility Pole		100 EA
02 41 13.33 0800	Guard Rail	12.13	LF
02 41 13.60 1700	Chain link, posts & fabric remove only	2.98	LF
23 05 05.10 3600	Mechanical equipment heavy	765	Ton
31 23 16.42 0260	Backhoe, hydraulic Bulk Bank Measure	1.42	CY
31 23 16.13 3080	Backfill trench Minimal Haul 2 1/4 CY	1.77	CY
02 65 10.30 0120	6000 gal. to 8000 gal.tank	865	EA
02 65 10.30 1026	6000 gal. to 8000 gal.tank	880	EA
02 65 10.30 0130	9000 gal. to 12000 gal. tank	1295	EA
02 65 10.30 1029	9000 gal. to 12000 gal. tank	1050	EA
Reveg005		23.56	MSF
C007/0331		1380.73	AC
Reveg007		66.24	Ton
01 54 33 4360	D9R Semi-U EROPS (9-25) (2H2007)	19900.00	
01 54 33 4360	Hourly Cost	136.65	
01 54 33 4870	988 G EROPS (9-35) (2nd2007) 2005	21900.00	
01 54 33 4870	Hourly Cost	155.75	
01 54 33 3600	627 G Scraper	25600.00	
01 54 33 3600	Hourly Cost	237.10	
01 54 33 6950	6,000 Gal H2O Truck Diesel	7000.00	
01 54 33 6950	Hourly Cost	89.80	
01 54 33 7200	Pick-up Truck 4x4 1 Ton	660.00	
01 54 33 7200	Hourly Cost	15.55	
	Forman Average Outside	38.65	
	Labor	36.65	
	Heavy Equip. Operator (Heavy)	48.90	
	Heavy Equip. Operator (Med)	48.90	
Reveg		19.80	MSF
01 54 33 40 7300	Farm Tractor with DISC	31.50	HR
Great Basin	100,000 Barrel Steel Tank	50000	
Great Basin	20,000 Barrel Steel Tank	20000	
02 41 13.33 3200	Steel Pipe	8.28	LF
Calculated	Steel Pipe	10.37	LF
23 05 05.10 0350	Boiler	2225	EA
23 05 05.10 0.40	Vapor Combustor	810	EA
02 41 16.13 0012	5,000 Barrel. Tank	0.27	CF
02 41 13.80 0100	Lights	192	EA
	Pumps	227	EA
	Fire Protection	268	EA

Loading Bin 01	1295	1295
Scales 02	6173	6173
Substation 03	4677	4677
Truck Dump West 04	3481	3481
Crushing Plant West 05	1079	1079
Radial Stacker West 06	3670	3670
Reclaim Tunnel West 07	8135	8135
Loadout Conveyor West 08	1382	1382
Control Building West 09	1331	1331
Truck Dump Reclaim 10	4087	4087
Conveyor 11	1552	1552
Crusher Screen Plant 12	8392	8392
Lump Coal Belt 13	486	486
Stoker radial Stacker 14	3131	3131
Conveyor 15	3064	3064
Main Radial Stacker 16	18310	18310
Loadout Reclaim 17	15911	15911
Loadout Tower 18	25008	25008
Office 19	5079	5079
Powerline 20	2500	2500
Shop 21	11539	11539
Guardrail 22	12130	12130
Culverts 23	1967	1967
Miscellaneous 24	6175	6175
Truck Dump New 25	3562	3562
Conveyor New 26	1224	1224
Radial Stacker 27	16849	16849
Conveyor 28	10845	10845
Office Trailer 29	To be sold	To be sold
Oil Storage Tanks (4) 30		176989
4 Inch Piping 31		8395
6 Inch Piping 32		45905
Misc. Equip. Removal 33		19127
Lighting 34		2304
	<hr/>	<hr/>
	183031	435751

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost		
		Loading Bin 01																					
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.3	CY	15	15	12								FT		2700	CF	810		
		Structure's Vol. Demolished																					
		Rubble's Weight (exclude steel)																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Non Steel Truck																					
		Transportation Cost Non Steel Drive																					
		Disposal Cost Non Steel																					
		Steel's Weight																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Steel Truck																					
		Transportation Cost Steel Drive																					
		Disposal Cost steel																					
		Subtotal																			810		
		Equipment's Disposal Cost																					
		Dismantling Cost																					
		Equipment's Vol. Demolished																					
		Loading Costs																					
		Transport Costs																					
		Disposal Costs																					
		Subtotal																					
		Concrete Demolition																					
		Demolition Cost	Concrete Demolition	Concrete Demo1	7	CY	30	18	1								FT		20	CY	140		
		Concrete's Vol. Demolished																					
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY												1.3		26	CY	43	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														26	CY	77	
		Disposal Costs	On Site Disposal		8.65	CY															26	CY	225
		Subtotal																				485	
		Concrete Demolition																					
		Demolition Cost																					
		Concrete's Vol. Demolished																					
		Loading Cost																					
		Transportation Cost																					
		Disposal Costs																					
		Subtotal																					
		Total																				1295	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost				
		Scales 02																							
		Structure's Demolition Cost	Mixture of types, average	02 41 16.13 0100	0.3	CF	14	60	8								FT		6720	CF	2016				
		Structure's Vol. Demolished																0.35	87	CY					
		Rubble's Weight (exclude steel)																							
		Truck's Capacity																							
		Haulage																							
		Transportation Cost Non Steel Truck																							
		Transportation Cost Non Steel Drive																							
		Disposal Cost Non Steel	City Sanitation	City Sanitation Price		4	CY													87	CY	348			
		Steel's Weight																							
		Truck's Capacity																							
		Haulage																							
		Transportation Cost Steel Truck																							
		Transportation Cost Steel Drive																							
		Disposal Cost steel																							
		Subtotal																				2364			
		Structure's Demolition Cost																							
		Structure's Vol. Demolished	Steel Bld. Large	02 41 16.13 0012	0.27	CF	14	60	8								FT		6720	CF	1814				
		Rubble's Weight (exclude steel)																							
		Truck's Capacity																							
		Haulage																							
		Transportation Cost Non Steel Truck																							
		Transportation Cost Non Steel Drive																							
		Disposal Cost Non Steel																							
		Steel's Weight																							
		Truck's Capacity																							
		Haulage																							
		Transportation Cost Steel Truck																							
		Transportation Cost Steel Drive																							
		Disposal Cost steel																							
		Subtotal																				1814			
		Concrete Demolition																							
		Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY	14	70	0.5							FT			18	CY	127			
		Concrete's Vol. Demolished																1.3		24	CY				
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300		1.67	CY														24	CY	39		
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014		2.95	CY														24	CY	70		
		Disposal Costs	On Site Disposal			8.65	CY															24	CY	204	
		Subtotal																					440		
		Concrete Demolition																							
		Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY	10	12	0.25							FT			1	CY	8			
		Concrete's Vol. Demolished																1.3		1	CY				
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300		1.67	CY														1	CY	2		
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014		2.95	CY														1	CY	4		
		Disposal Costs	On Site Disposal			8.65	CY															1	CY	12	
		Subtotal																					27		
		Concrete Demolition																							
		Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY	340	20	0.25							FT				63	CY	441		
		Concrete's Vol. Demolished																1.3			82	CY			
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300		1.67	CY															82	CY	137	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014		2.95	CY															82	CY	241	
		Disposal Costs	On Site Disposal			8.65	CY																82	CY	708
		Subtotal																					1527		
		Total																					6173		

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		Substation 03																				
		Structure's Demolition Cost	Mechanical equipment heavy	23 05 05.10 3600	765	Ton								3			Ton		3	Ton	2295	
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Drive																				
		Disposal Cost steel																				
		Subtotal																			2295	
		Equipment's Disposal Cost																				
		Dismantling Cost	Chain link_posts & fabric remove only	02 41 13.60 1700	2.98	LF	250										LF		250	LF	745	
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																			745	
		Equipment's Disposal Cost																				
		Dismantling Cost	Utility Pole		100	EA											13	EA		13	EA	1300
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																			1300	
		Concrete Demolition																				
		Demolition Cost	Concrete Demolition	Concrete Demo1	7	CY	25	15	0.5								FT		7	CY	49	
		Concrete's Vol. Demolished																	1.3	9	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														9	CY	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														9	CY	
		Disposal Costs	On Site Disposal		8.65	CY														9	CY	
		Subtotal																			168	
		Concrete Demolition																				
		Demolition Cost	Concrete Demolition	Concrete Demo1	7	CY	25	15	0.5								FT		7	CY	49	
		Concrete's Vol. Demolished																	1.3	9	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														9	CY	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														9	CY	
		Disposal Costs	On Site Disposal		8.65	CY														9	CY	
		Subtotal																			168	
		Total																			4677	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Truck Dump West 04																			
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	40	14	15								FT		8400	CF	2268
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2268
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demol		7	CY					50					CY				350
		Concrete's Vol. Demolished																	1.3		65
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY															109
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY															192
		Disposal Costs	On Site Disposal		8.65	CY															65
		Subtotal																			1213
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			3481

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		Crushing Plant West 05																				
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	20	15	10								FT		3000	CF	810	
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Drive																				
		Disposal Cost steel																				
		Subtotal																				810
		Equipment's Disposal Cost																				
		Dismantling Cost																				
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost	Concrete Demolition	Concrete Demo1		7 CY	20	15	1								FT		11			78
		Concrete's Vol. Demolished																	1.3			14
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY																24
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. Trip	31 23 23.20 1014	2.95	CY																43
		Disposal Costs	On Site Disposal		8.65	CY																125
		Subtotal																				269
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Total																				1079

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Radial Stacker West 06																			
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	150	8	8								FT		9600	CF	2592
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2592
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1		7 CY	150	8	1								FT		44	CY	311
		Concrete's Vol. Demolished																	1.3	58	CY
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														58	CY
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														58	CY
		Disposal Costs	On Site Disposal		8.65	CY															58
		Subtotal																			1078
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			3670

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost		
		Reclaim Tunnel West 07																					
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	190	14	8								FT		21280	CF	5746		
		Structure's Vol. Demolished																					
		Rubble's Weight (exclude steel)																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Non Steel Truck																					
		Transportation Cost Non Steel Drive																					
		Disposal Cost Non Steel																					
		Steel's Weight																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Steel Truck																					
		Transportation Cost Steel Drive																					
		Disposal Cost steel																					
		Subtotal																				5746	
		Equipment's Disposal Cost																					
		Dismantling Cost																					
		Equipment's Vol. Demolished																					
		Loading Costs																					
		Transport Costs																					
		Disposal Costs																					
		Subtotal																					
		Concrete Demolition																					
		Demolition Cost	Concrete Demolition	Concrete Demo1		7 CY	190	14	1								FT		99	CY	690		
		Concrete's Vol. Demolished																	1.3				
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														128	CY	214	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														128	CY	378	
		Disposal Costs	On Site Disposal		8.65	CY															128	CY	1108
		Subtotal																				2389	
		Concrete Demolition																					
		Demolition Cost																					
		Concrete's Vol. Demolished																					
		Loading Cost																					
		Transportation Cost																					
		Disposal Costs																					
		Subtotal																					
		Total																				8135	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		Loadout Conveyor West 08																				
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	320	4	4								FT		5120		1382	
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Drive																				
		Disposal Cost steel																				
		Subtotal																				1382
		Equipment's Disposal Cost																				
		Dismantling Cost																				
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Total																				1382

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		Control Building West 09																				
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	30	15	8								FT		3600	CF	972	
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Drive																				
		Disposal Cost steel																				
		Subtotal																			972	
		Equipment's Disposal Cost																				
		Dismantling Cost																				
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY	40	20	0.5							FT		15	CY	104	
		Concrete's Vol. Demolished																	1.3	19	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														19	CY	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														19	CY	
		Disposal Costs	On Site Disposal		8.65	CY															19	CY
		Subtotal																			359	
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Total																			1331	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost		
		Truck Dump Reclaim 10																					
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	40	14	15								FT		8400	CF	2268		
		Structure's Vol. Demolished																					
		Rubble's Weight (exclude steel)																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Non Steel Truck																					
		Transportation Cost Non Steel Drive																					
		Disposal Cost Non Steel																					
		Steel's Weight																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Steel Truck																					
		Transportation Cost Steel Drive																					
		Disposal Cost steel																					
		Subtotal																				2268	
		Equipment's Disposal Cost																					
		Dismantling Cost																					
		Equipment's Vol. Demolished																					
		Loading Costs																					
		Transport Costs																					
		Disposal Costs																					
		Subtotal																					
		Concrete Demolition																					
		Demolition Cost	Concrete Demolition	Concrete Demo 1		7	CY					75					CY		75	CY	525		
		Concrete's Vol. Demolished																	1.3	98	CY		
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														98	CY	163	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														98	CY	288	
		Disposal Costs	On Site Disposal		8.65	CY															98	CY	843
		Subtotal																				1819	
		Concrete Demolition																					
		Demolition Cost																					
		Concrete's Vol. Demolished																					
		Loading Cost																					
		Transportation Cost																					
		Disposal Costs																					
		Subtotal																					
		Total																				4087	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		Conveyor 11																				
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	250	4	4								FT		4000	CF	1080	
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Drive																				
		Disposal Cost steel																				
		Subtotal																			1080	
		Equipment's Disposal Cost																				
		Dismantling Cost																				
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY	15	35	1							FT		19	CY	136	
		Concrete's Vol. Demolished																	1.3	25	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														25	CY	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														25	CY	
		Disposal Costs	On Site Disposal		8.65	CY															25	CY
		Subtotal																			472	
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Total																			1552	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Crusher Screen Plant 12																			
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	44	20	15								FT		13200	CF	3564
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			3564
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	35	30	8								FT		8400	CF	2268
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2268
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	7	CY	57	50	1								FT		106	CY	739
		Concrete's Vol. Demolished																1.3	137	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														137	CY
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trg	31 23 23.20 1014	2.95	CY														137	CY
		Disposal Costs	On Site Disposal		8.65	CY															1187
		Subtotal																			2560
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			8392

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost		
		Lump Coal Belt 13																					
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	100	3	3								FT		900	CF	243		
		Structure's Vol. Demolished																					
		Rubble's Weight (exclude steel)																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Non Steel Truck																					
		Transportation Cost Non Steel Drive																					
		Disposal Cost Non Steel																					
		Steel's Weight																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Steel Truck																					
		Transportation Cost Steel Drive																					
		Disposal Cost steel																					
		Subtotal																				243	
		Equipment's Disposal Cost																					
		Dismantling Cost																					
		Equipment's Vol. Demolished																					
		Loading Costs																					
		Transport Costs																					
		Disposal Costs																					
		Subtotal																					
		Concrete Demolition																					
		Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY					10					CY		10	CY	70		
		Concrete's Vol. Demolished																	1.3	13	CY		
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														13	CY	22	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														13	CY	38	
		Disposal Costs	On Site Disposal		8.65	CY															13	CY	112
		Subtotal																				243	
		Concrete Demolition																					
		Demolition Cost																					
		Concrete's Vol. Demolished																					
		Loading Cost																					
		Transportation Cost																					
		Disposal Costs																					
		Subtotal																					
		Total																				486	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Stoker radial Stacker 14																			
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	100	10	10								FT		10000	CF	2700
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2700
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	7	CY	60	8	1								FT		18	CY	124
		Concrete's Vol. Demolished																			
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY												1.3	23	CY	39
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY													23	CY	68
		Disposal Costs	On Site Disposal	02 41 16.17 4200	8.65	CY													23	CY	200
		Subtotal																			431
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			3131

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Conveyor 15																			
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	600	4	4								FT		9600	CF	2592
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2592
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1		7 CY	35	15	1								FT		19	CY	136
		Concrete's Vol. Demolished																	1.3	25	CY
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300		1.67														25	CY
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014		2.95														25	CY
		Disposal Costs	On Site Disposal	02 41 16.17 4200		8.65														25	CY
		Subtotal																			472
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			3064

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		Main Radial Stackler 16																				
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	260	15	15								FT		58500	CF	15795	
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Drive																				
		Disposal Cost steel																				
		Subtotal																			15795	
		Equipment's Disposal Cost																				
		Dismantling Cost																				
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY	280	10	1							FT		104	CY	726	
		Concrete's Vol. Demolished																				
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300		1.67	CY											1.3	135	CY	225	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014		2.95	CY												135	CY	398	
		Disposal Costs	On Site Disposal	02 41 16.17 4200		8.65	CY													135	CY	1166
		Subtotal																			2515	
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Total																			18310	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Loadout Reclaim 17																			
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	750	4	8								FT		24000	CF	6480
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			6480
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY	750	14	1							FT		389	CY	2722
		Concrete's Vol. Demolished																	1.3	506	CY
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300		1.67	CY													506	CY
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014		2.95	CY													506	CY
		Disposal Costs	On Site Disposal	02 41 16.17 4200		8.65	CY													506	CY
		Subtotal																			9431
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			15911

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Nimber	Unit	Swell Factor	Quantity	Unit	Cost
		Loadout Tower 18																			
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	35	40	60								FT		84000	CF	22680
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			22680
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	7	CY	12	8	1								FT		4	CY	25
		Concrete's Vol. Demolished																1.3	5	CY	8
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY													5	CY	8
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Tri	31 23 23.20 1014	2.95	CY													5	CY	14
		Disposal Costs	On Site Disposal	02 41 16.17 4200	8.65	CY													5	CY	40
		Subtotal																			86
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	7	CY	12	8	1								FT		4	CY	25
		Concrete's Vol. Demolished																1.3	5	CY	8
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY													5	CY	8
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Tri	31 23 23.20 1014	2.95	CY													5	CY	14
		Disposal Costs	On Site Disposal	02 41 16.17 4200	8.65	CY													5	CY	40
		Subtotal																			86
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	7	CY	40	60	1								FT		89	CY	622
		Concrete's Vol. Demolished																1.3	116	CY	193
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY													116	CY	341
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Tri	31 23 23.20 1014	2.95	CY													116	CY	1000
		Disposal Costs	On Site Disposal	02 41 16.17 4200	8.65	CY													116	CY	2156
		Subtotal																			2156
		Total																			25008

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Office 1D																				
	Structure's Demolition Cost	Steel Blk. Large	02 41 16.13 0012	0.27	CF	40	30	8								FT		9600	CF	2592	
	Structure's Vol. Demolished																0.35	124	CY		
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel	City Sanitation	City Sanitation Price		4	CY												124	CY	498	
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Drive																				
	Disposal Cost steel																				
	Subtotal																				3090
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY	66	30	0.5							FT		37	CY	257	
	Concrete's Vol. Demolished																1.3	48	CY		
	Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY													48	CY	80	
	Transportation Cost	12 Cv (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY													48	CY	141	
	Disposal Costs	On Site Disposal	02 41 16.17 4200	8.65	CY													48	CY	412	
	Subtotal																				889
	Concrete Demolition																				
	Demolition Cost	Concrete Demolition	Concrete Demo1		7	CY	70	35	0.5							FT		45	CY	318	
	Concrete's Vol. Demolished																1.3	59	CY		
	Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY													59	CY	98	
	Transportation Cost	12 Cv (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY													59	CY	174	
	Disposal Costs	On Site Disposal	02 41 16.17 4200	8.65	CY													59	CY	510	
	Subtotal																				1100
	Total																				5079

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		Powerline 20																				
		Structure's Demolition Cost	Utility Pole		100	EA										25	EA		25	EA	2500	
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Drive																				
		Disposal Cost steel																				
		Subtotal																			2500	
		Equipment's Disposal Cost																				
		Dismantling Cost																				
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Total																			2500	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		Shop 21																				
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	40	45	20								FT		36000	CF	9720	
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Drive																				
		Disposal Cost steel																				
		Subtotal																				9720
		Equipment's Disposal Cost																				
		Dismantling Cost																				
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost	Concrete Demolition	Concrete Demo1		7 CY	45	45	1								FT			75	CY	525
		Concrete's Vol. Demolished																	1.3		98	CY
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300		1.67															98	CY
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014		2.95															98	CY
		Disposal Costs	On Site Disposal	02 41 16.17 4200		8.65															98	CY
		Subtotal																				1819
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Total																				11539

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Guardrail 22																			
		Structure's Demolition Cost	Guard Rail	02 41 13.33 0800	12.13	LF	1000										FT		1000	FT	12130
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			12130
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			12130



Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Miscellaneous 24																			
		Structure's Demolition Cost																			
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			
		Water Tank																			
		Equipment's Disposal Cost	6000 gal. to 8000 gal.tank	02 65 10.30 0120	865	EA						8000					GAL		1	EA	865
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs	9000 gal. to 12000 gal. tank	02 65 10.30 1029	1050	EA						8000					GAL		1	EA	1050
		Subtotal																			1915
		Water Tank																			
		Equipment's Disposal Cost	6000 gal. to 8000 gal.tank	02 65 10.30 0120	865	EA						6000					GAL		1	EA	865
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs	9000 gal. to 12000 gal. tank	02 65 10.30 1029	1050	EA						6000					GAL		1	EA	1050
		Subtotal																			1915
		Water Tank																			
		Equipment's Disposal Cost	9000 gal. to 12000 gal. tank	02 65 10.30 0130	1295	EA						10000					GAL		1	EA	1295
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs	9000 gal. to 12000 gal. tank	02 65 10.30 1029	1050	EA						10000					GAL		1	EA	1050
		Subtotal																			2345
		Total																			6175

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost		
		Truck Dump New 25																					
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	40	14	15								FT		8400	CF	2268		
		Structure's Vol. Demolished																					
		Rubble's Weight (exclude steel)																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Non Steel Truck																					
		Transportation Cost Non Steel Drive																					
		Disposal Cost Non Steel																					
		Steel's Weight																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Steel Truck																					
		Transportation Cost Steel Drive																					
		Disposal Cost steel																					
		Subtotal																				2268	
		Equipment's Disposal Cost																					
		Dismantling Cost																					
		Equipment's Vol. Demolished																					
		Loading Costs																					
		Transport Costs																					
		Disposal Costs																					
		Subtotal																					
		Concrete Demolition																					
		Demolition Cost	Concrete Demolition	Concrete Demo1		CY						75					CY		75	CY		0	
		Concrete's Vol. Demolished																					
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY												1.3		98	CY	163	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														98	CY	288	
		Disposal Costs	On Site Disposal		8.65	CY															98	CY	843
		Subtotal																				1294	
		Concrete Demolition																					
		Demolition Cost																					
		Concrete's Vol. Demolished																					
		Loading Cost																					
		Transportation Cost																					
		Disposal Costs																					
		Subtotal																					
		Total																				3562	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost		
		Conveyor New 26																					
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	250	4	4								FT		4000	CF	1080		
		Structure's Vol. Demolished																					
		Rubble's Weight (exclude steel)																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Non Steel Truck																					
		Transportation Cost Non Steel Drive																					
		Disposal Cost Non Steel																					
		Steel's Weight																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Steel Truck																					
		Transportation Cost Steel Drive																					
		Disposal Cost steel																					
		Subtotal																				1080	
		Equipment's Disposal Cost																					
		Dismantling Cost																					
		Equipment's Vol. Demolished																					
		Loading Costs																					
		Transport Costs																					
		Disposal Costs																					
		Subtotal																					
		Concrete Demolition																					
		Demolition Cost	Concrete Demolition	Concrete Demo1		CY	15	15	1								FT		8	CY	0		
		Concrete's Vol. Demolished																	1.3	11	CY		
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														11	CY	18	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														11	CY	32	
		Disposal Costs	On Site Disposal		8.65	CY															11	CY	94
		Subtotal																				144	
		Concrete Demolition																					
		Demolition Cost																					
		Concrete's Vol. Demolished																					
		Loading Cost																					
		Transportation Cost																					
		Disposal Costs																					
		Subtotal																					
		Total																				1224	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost		
		Radial Stacker 27																					
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.27	CF	250	15	15								FT		56250	CF	15188		
		Structure's Vol. Demolished																					
		Rubble's Weight (exclude steel)																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Non Steel Truck																					
		Transportation Cost Non Steel Drive																					
		Disposal Cost Non Steel																					
		Steel's Weight																					
		Truck's Capacity																					
		Haulage																					
		Transportation Cost Steel Truck																					
		Transportation Cost Steel Drive																					
		Disposal Cost steel																					
		Subtotal																				15188	
		Equipment's Disposal Cost																					
		Dismantling Cost																					
		Equipment's Vol. Demolished																					
		Loading Costs																					
		Transport Costs																					
		Disposal Costs																					
		Subtotal																					
		Concrete Demolition																					
		Demolition Cost	Concrete Demolition	Concrete Demo1		CY	260	10	1								FT		96	CY	0		
		Concrete's Vol. Demolished																	1.3	125	CY		
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY														125	CY	209	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY														125	CY	369	
		Disposal Costs	On Site Disposal		8.65	CY															125	CY	1083
		Subtotal																				1661	
		Concrete Demolition																					
		Demolition Cost																					
		Concrete's Vol. Demolished																					
		Loading Cost																					
		Transportation Cost																					
		Disposal Costs																					
		Subtotal																					
		Total																				16849	

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Conveyor 28																			
		Structure's Demolition Cost	Steel Bld. Large	02 41 16.13 0012	0.3	CF	1250	7	4								FT		35000	CF	10500
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			10500
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1		CY						20					CY		20	CY	0
		Concrete's Vol. Demolished																			
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	1.67	CY												1.3	26	CY	
		Transportation Cost	12 Cy (16 Ton) dump Truck 1/2 mi. rod. Trip	31 23 23.20 1014	2.95	CY													26	CY	43
		Disposal Costs	On Site Disposal		8.65	CY													26	CY	225
		Subtotal																			345
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			10845

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		Office Trailer 29																				
		Structure's Demolition Cost																				To be sold
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Drive																				
		Disposal Cost steel																				
		Subtotal																				
		Equipment's Disposal Cost																				
		Dismantling Cost																				
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Total																				To be sold

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost		
	Oil Storage Tanks (4) 30																					
	Structure's Demolition Cost	100,000 Barrel Steel Tank	Great Basin	50000	EA			40	146										2	EA	100000	
	Structure's Demolition Cost	20,000 Barrel Steel Tank	Great Basin	20000	EA			32	70										2	EA	40000	
	Structure's Vol. Demolished																					
	Rubble's Weight (exclude steel)																					
	Truck's Capacity																					
	Haulage																					
	Transportation Cost Non Steel Truck																					
	Transportation Cost Non Steel Drive																					
	Disposal Cost Non Steel																					
	Steel's Weight																					
	Truck's Capacity																					
	Haulage																					
	Transportation Cost Steel Truck																					
	Transportation Cost Steel Truck Drive																					
	Disposal Cost Steel																					
	Subtotal																				140000	
	Equipment 's Disposal Cost																					
	Dismantling Cost																					
	Equipment 's Vol. Demolished																					
	Loading Costs																					
	Transport Costs																					
	Disposal Costs																					
	Subtotal																					
	100,000 Barrel Tanks																					
	Concrete Demolition																					
	Demolition Cost	Concrete demolition	02 41 16.13 1140	7	/CY			1		728	728				2			1.3	122	CY	854	
	Concrete's Vol. Demolished																					
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY			5		183	915								159	CY	266	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2	31 23 23.20 1020	2.95	/CY														159	CY	469	
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.65	/CF														159	CY	1375	
	Subtotal																				2964	
	20,000 Barrel Tanks																					
	Concrete Demolition																					
	Demolition Cost	Concrete demolition	02 41 16.13 1140	7	/CY			1		370	370				2			1.3	61	CY	427	
	Concrete's Vol. Demolished																					
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY			5		92	460								79	CY	132	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2	31 23 23.20 1020	2.95	/CY														79	CY	233	
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.65	/CF														79	CY	683	
	Subtotal																				1475	
	Tank Floors																					
	Concrete Demolition																					
	Demolition Cost	Concrete demolition	02 41 16.13 1140	7	/CY			0.75	156		531				2				1.3	1342	CY	9394
	Concrete's Vol. Demolished							0.75	80		140				2							
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY														1.3	1745	CY	2914
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2	31 23 23.20 1020	2.95	/CY														1.3	1745	CY	5148
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.65	/CF														1.3	1745	CY	15094
	Subtotal																				32550	
	Total																				176989	

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	4 Inch Piping 31																				
	Structure's Demolition Cost	Steel Pipe	02 41 13.33 3200	8.28	/LF	1011										FT		1011	LF	8371	
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																			8371	
	Equipment's Disposal Cost																				
	Dismantling Cost																				
	Equipment's Vol. Demolished																				
	Loading Costs																				
	Transport Costs																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	02 41 16.13 1140	7	/CY	1	1	1							34			1	CY	7	
	Concrete's Vol. Demolished																	1.3			
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY														1.3	CY	2
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 ml. rnd. tnp	31 23 23.20 1020	2.95	/CY														1.3	CY	4
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.65	/CF														1.3	CY	11
	Subtotal																			24	
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																			8395	

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	6 Inch Piping 32																				
	Structure's Demolition Cost	Steel Pipe	Calculated	10.37	/LF	4326										FT		4326	LF	44861	
	Structure's Vol.																				
	Structure's Vol. Demolished																				
	Rubble's Weight (exclude steel)																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Non Steel Truck																				
	Transportation Cost Non Steel Drive																				
	Disposal Cost Non Steel																				
	Steel's Weight																				
	Truck's Capacity																				
	Haulage																				
	Transportation Cost Steel Truck																				
	Transportation Cost Steel Truck Drive																				
	Disposal Cost Steel																				
	Subtotal																			44861	
	Concrete Demolition																				
	Demolition Cost	Concrete demolition	ConcreteDemo1	7	/CY	4	2	1								144	FT		43	CY	301
	Concrete's Vol. Demolished																	1.3	56	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY														56	CY	94
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1020	2.95	/CY														56	CY	165
	Disposal Costs	Disposal on site	02 41 16 17 4200	8.65	/CF														56	CY	484
	Subtotal																				1044
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Concrete Demolition																				
	Demolition Cost																				
	Concrete's Vol. Demolished																				
	Loading Cost																				
	Transportation Cost																				
	Disposal Costs																				
	Subtotal																				
	Total																				45905

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
	Misc. Equip. Removal 33																				
	Structure's Demolition Cost	Pumps		227	EA										12			12	EA	2724	
	Subtotal																			2724	
	Structure's Demolition Cost	Boiler	23 05 05.10 0350	2225	EA										1			1	EA	2225	
	Subtotal																			2225	
	Structure's Demolition Cost	Fire Protection		268	EA										4			4	EA	1072	
	Structure's Demolition Cost	5,000 Barrel. Tank	02 41 16.13 0012	0.27	CF						30788				1			30788	CF	8313	
	Subtotal																			9385	
	Structure's Demolition Cost	Diesel Tank																		To be sold	
	Subtotal																				
	Tank Foundation																				
	Concrete Demolition	Concrete demolition	Concrete Demo1	7	CY				2	1590	118							118		826	
	Concrete's Vol. Demolished																1.3	153			
	Loading Cost	Front end loader 3 CY	31 23 16.42 1300	1.67	CY													153		256	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	CY													153		451	
	Disposal Costs	Disposal on site	02 41 16.17 4200	8.65	CY													153		1323	
	Subtotal																			2856	
	Structure's Demolition Cost																				
	Substation	Mechanical equipment heavy	23 05 05.10 3600	765	Ton							2						2	Ton	1530	
	Fence	Chain link, posts & fabric remove only	02 41 13.60 1700	2.98	LF	105												105	LF	313	
	Subtotal																			1843	
	Substation Foundation																				
	Concrete Demolition	Concrete demolition	Concrete Demo1	7	CY	10	10	1										4	CY	28	
	Concrete's Vol. Demolished																1.3	5	CY		
	Loading Cost	Front end loader 3 CY	31 23 16.42 1300	1.67	CY													5	CY	8	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	CY													5	CY	15	
	Disposal Costs	Disposal on site	02 41 16.17 4200	8.65	CY													5	CY	43	
	Subtotal																			94	
	Total																			19127	

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Lighting 34																			
	Structure's Demolition Cost	Lights	02 41 13.80 0100	192	EA										12			12	EA	2304
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			2304
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition																		
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY																		
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip																		
	Disposal Costs	Disposal on site																		
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition																		
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY																		
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip																		
	Disposal Costs	Disposal on site																		
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition																		
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY																		
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip																		
	Disposal Costs	Disposal on site																		
	Subtotal																			
	Total																			2304

Cleanup 01	10067
Regrading 02	256251
Topsoil 03	<u>38119</u>
	304438

	Task	Equipment Cost	Hourly Operating Rate	Equipment Overhead	Operator's Hourly Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Cleanup 01																
Wildcat loadout Cleanup Coal Pile																
D9R Semi-U EROPS (9-25) (2H2007)		19900.00	136.65	0.1	48.90	323.59	1	323.59	\$/HR	1500	CY	187	CY/HR	8	HR	2596
988 G EROPS (9-35) (2nd2007) 2005		21900.00	155.75	0.1	48.90	357.10	1	357.10	\$/HR	1500	CY	187	CY/HR	8	HR	2864
Labor					36.65	36.65	1	36.65	\$/HR					16	HR	586
Forman Average Outside					38.65	38.65	1	38.65	\$/HR					16	HR	618
6,000 Gal H2O Truck Diesel		7000.00	89.80	0.1	48.90	191.43	1	191.43	\$/HR					16	HR	3063
Pick-up Truck 4x4 1 Ton		660.00	15.55	0.1		21.23	1	21.23	\$/HR					16	HR	340
																10067

	Task	Equipment Cost	Hourly Operating Rate	Equipment Overhead	Operator's Hourly Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Regrading 02																
Wildcat Loadout Recontour/Regrade																
D9R Semi-U EROPS (9-25) (2H2007)		19900.00	136.65	0.1	48.90	323.59	1	323.59	\$/HR	38872	CY	187	CY/HR	207.9	HR	67265
627 G Scraper		25600.00	237.10	0.1	48.90	469.71	1	469.71	\$/HR	38872	CY	332.6	CY/HR	116.9	HR	54896
988 G EROPS (9-35) (2nd2007) 2005		21900.00	155.75	0.1	48.90	357.10	1	357.10	\$/HR					207.9	HR	74231
CLAB					36.65	36.65	1	36.65	\$/HR					207.9	HR	7618
Foreman Average, Outside					38.65	38.65	1	38.65	\$/HR					207.9	HR	8034
5,000 Water Truck Diesel		7000.00	89.80	0.1	48.90	191.43	1	191.43	\$/HR					207.9	HR	39793
Pickup Truck 4X4 1 Ton		660.00	15.55	0.1		21.23	1	21.23	\$/HR					207.9	HR	4413
																256251

	Task	Equipment Cost	Hourly Operating Rate	Equipment Overhead	Operator's Hourly Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Topsoil 03																
Wildcat Loadout Topsoil																
627 G Scraper		25600.00	237.10	0.1	48.90	469.71	1	469.71	\$/HR	15549	CY	566	CY/HR	27	HR	12904
D9R Semi-U EROPS (9-25) (2H2007)		19900.00	136.65	0.1	48.90	323.59	1	323.59	\$/HR	10000	CY	187	CY/HR	53	HR	17304
Labor						36.65	1	36.65	\$/HR					27	HR	1007
Forman Average Outside						38.65	1	38.65	\$/HR					27	HR	1062
6,000 Gal H2O Truck Diesel		7000.00	89.80	0.1	48.90	191.43	1	191.43	\$/HR					27	HR	5259
Pick-up Truck 4x4 1 Ton		660.00	15.55	0.1		21.23	1	21.23	\$/HR					27	HR	583
																38119

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Revegetation Costs																			
	Ground Preparation	Backfill trench Minimal Haul 2 1/4 CY	31 23 16.13 3080	1.77	CY					69						AC		23460	CY	41524
	Seeding	Hydro Spreader (equip. & labor)	Reveg005	23.56	MSF					69						AC		3005.6	MSF	70813
	Seeding	Seed (Material costs)	C007/0331	1380.73	AC					69						AC		69.0	AC	95270
	Mulch 2 tons per acre	Hay Bale	Reveg007	66.24	Ton					69						AC		138.0	Ton	9141
	Mulch	Hydro Spreader (equip. & labor)	Reveg005	23.56	MSF					69						AC		3005.6		70813
	Subtotal																			216749
	6.82 AC Disturbance																			
	Scrape Area of Coal Fines	D9/Production Rate of 180	1 ACRE inch	280.00	per HR			1 inch		6.83	128	145	Tons	1 HR	128	CY		128	CY	280
	Hydro Seed	Equipment and Labor	Reverq 002	19.80	MSF					6.83						298	MSF	298	MSF	5900
	Wildcat Loadout Seed Mix	Approved Final Reclamation Seed Mix		1380.73	AC					6.83						1380.73	\$/AC	6.83	AC	9430
	Mulch/Straw Spreader	Straw Bales/1 Ton per Acre		129.00	Ton					6.83						1	Ton/AC	6.83	Tons	881
	Mulch/Straw Spreader	Equipment and Labor	Reveg005	23.56	MSF					6.83						298	MSF	298	MSF	7021
	Crimp/DISC Straw into Ground	Farm Tractor with DISC	01 54 33 40 7300	31.50	HR					6.83						16	HR	16	HR	504
	Labor/Farm Tractor	Equipment		70.25	8 HR Day					6.83						2	Days	2	Days	141
	Subtotal																			24157
	Reseeding																			
	Assume 25% reseeding rate																			54187
	Subtotal																			54187
	Total																			295093