MT NEBO SCIENTIFIC, INC.
research & consulting

VIA: E-mail

April 28, 2015

Daron Haddock, Environmental Manager
Utah Coal Regulatory Program
STATE OF UTAH
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

C/007/0012
Received 4/28/2015
Task ID #4891

RE: Wellington Prep Plant(C/007/0012): Postmining Land Use Change

Dear Mr. Haddock:

PROPOSED CHANGES

Price River Terminal (PRT) is proposing to change the current and postmining land uses of the Wellington property. The change would impact a portion of the permit area and would be consistent with current operations at the site that are *not* related to coal and reclamation activities.

Attached is a Redline/~~Strikeout~~ electronic version of the revision to Wellington's Mining & Reclamation Plan (MRP). Also included are the appropriate *C1/C2 forms* as well as *Comments and Insertion Instructions* for changes to the current MRP.

JUSTIFICATIONS FOR THE CHANGE

As you know, in November 2013 Price River Terminal, LLC (PRT), purchased the Wellington Preparation Plant property from NEICO. PRT then obtained DOGM approval to operate a small section of the property in the northwest corner of the permit area as a "Crude-by-Rail" transloading facility. Crude oil is delivered to the site by truck where it is transferred to railcars for shipment to various oil refineries throughout the United States. Future development of the transloading operations has been planned.

Like the approved transloading area, other areas of the property are also unrelated to coal mining and reclamation activities. These areas are also ideally suited for "industrial" land uses for many reasons, some of which have been described in the attached document. Moreover, these areas have been previously zoned as "heavy industrial" by Carbon County.

330 East 400 South, Ste. 6, P.O. Box 337, Springville, Utah 84663
(801) 489-6937, (fax) 489-6779

FOCUS OF THE CHANGES IN THE MRP

The most applicable sections of Wellington's current MRP for the land use changes have been addressed in this submittal. To summarize, this document focuses on the following sections:

Land Use - Current and postmining land uses proposed for the site have been addressed in **Chapter 4** of the MRP (R645-301-400).

Soil Borrow Areas - There are several borrow areas onsite that have been approved to be used as suitable cover at the time of final reclamation. The borrow areas have been reviewed with respect the proposed changes in the MRP. Efforts have made to minimize use of those borrow areas that have had no previous disturbance to them. Also considerations were made to attempt to utilize those borrow areas where revegetation of them would be straightforward after the soil material has been removed. The proposed borrow areas to be used in the new plan along with volumes of material needed are provided in **Chapter 2** (R645-301-200).

Revegetation - Although the revegetation techniques at Wellington will remain unchanged, those areas required to be reclaimed through SMCRA will have some *minor* changes. These changes as well as updated wording have been provided in **Chapter 3** (R645-301-300).

Hydrology - The proposed postmining land use change will modify the hydrologic monitoring plan required with SMCRA. Chapter 7 (R645-301-700) has been updated to reflect these changes. We corrected outdated/obsolete references to previous facility owners and previous operations at the Wellington property throughout text in the chapter. We updated the relevant sections of the probable hydrologic consequences sections regarding the recent reclamation activity of removing slurry coal fines from the slurry basins. A new hydrologic monitoring plan was prepared for groundwaters and surface waters. This new plan reflects the presence of the new industrial area. We have also removed references in Chapter 7 to existing sediment control structures that are no longer required to control sediment in the new industrial area on the Wellington property.

Bonding - **Chapter 8** of the MRP provides bonding information for Wellington. The reclamation costs from which the bond was based are found in Appendix J. This appendix remains unchanged. Although Chapter 8 has been updated, no bond reduction has been requested at this time. This procedure will be conducted after the postmining land use change has been approved by the Division. The bond release process will follow the regulations outlined in R645-301-880.

Maps - A review of the MRP maps related to the proposed changes was conducted. The maps applicable to the new current and postmining land use changes have been revised in this submittal. These maps include: Permit Area and Facilities, Current Land Use, Postmining Land Use, Disturbed Areas and Hydrologic Monitoring.

Public Notice - In R645-303-220 some proposed changes to the plan are considered to be an *Amendment* to the permit. However, if R645-301-414 applies here, then the changes will probably be considered a *Significant Revision* to the permit. In the latter, a public notice will be necessary that follows R645-300-120. Therefore, a *draft* public notice for the proposed permit changes has been included with the document.

Please contact me anytime with any questions or comments.

Sincerely,

Patrick D. Collins, Ph.D.
Resident Agent

Attachments

cc: T. Stanley (PRT)

APPLICATION FOR COAL PERMIT PROCESSING

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

Permittee: Price River Terminal

Mine: Wellington Prep Plant **Permit Number:** C/007/0012

Title: Postmining Land Use Change (Redline/Strikeout Version)

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

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

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

Please attach one (1) review copy of the application.

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.

PATRICK COLLINS
Print Name

Patrick W Collins Res.Ag. 4/20/15
Sign Name, Position, Date

Subscribed and sworn to before me this 20 day of April, 2015

K Rayburn
Notary Public

My commission Expires: 11-22, 2018
Attest: State of Utah } ss:
County of Utah

KIMBERLY RAYBURN
Notary Public State of Utah
Commission #680151
My Commission Expires
November 22, 2018

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining

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

Permittee: Price River Terminal
Mine: Wellington Prep Plant **Permit Number:** C/007/0012
Title: Postmining Land Use Change (Redline/Strikeout Version)

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

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☒ Add	☒ Replace	☒ Remove	Refer to COMMENTS & INSERTION INSTRUCTIONS
☐ Add	☐ Replace	☐ Remove	
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.	**Received by Oil Gas & Mining**

Wellington Preparation Plant (C/007/0012)

A Significant Revision to the Mining & Reclamation Plan

Postmining Land Use Change

Comments & Insertion Instructions

April 28, 2015
(*Redline*/~~Strikeout~~ *Version*)

Price River Terminal, LLC
3215 West 4th Street
Fort Worth, Texas 76107

The following are proposed changes to the Wellington Preparation Plant permit along with PRT comments and instructions for insertion to the existing Mining & Reclamation Plan (MRP).

PRT Comments:

One of the major differences in the revision was to reassign soil borrow areas that will be used for cover at the time of final reclamation. Efforts were made to minimize use of those borrow areas that have had no previous disturbance to them. Also considerations were made to use those borrow areas where revegetation would be expedited after the soil material has been removed during reclamation.

MRP Insertion Instructions:

- Sec. 2.41, pp. 1-7, 04/15/15 of this submittal replaces
- Sec. 2.41, pp. 1-7, 11/20/12 of the Division's copy of the MRP

Mt. Nebo Scientific, Inc.
P.O. Box 337, 330 East 400 South, Suite 6
Springville, Utah 84663

PRT Comments:

PRT has made some minor modifications to the biology chapter mostly related to updating the chapter and changes to be consistent with the proposed postmining land use change.

MRP Insertion Instructions:

- Sec. 3.41, pp. 1-4, 04/15/15 of this submittal replaces
- Sec. 3.41, pp. 1-4, 11/10/94 of the current MRP.

- Sec. 3.41, pp. 36-49, 04/15/15 of this submittal replaces
- Sec. 3.41, pp. 36-49, (various dates) of the Division's copy of the MRP

PRT Comments:

Much of the land use information required in the MRP can be found in the R645-301-400 regulations. These regulations have been addressed in Sections 4.12 and 4.13 of Wellington's MRP. The legal description of the proposed "industrial area" for the postmining land use change has been provided Section 4.13.

MRP Insertion Instructions:

- Sec. 4.12, p. 1, 04/15/15 of this submittal replaces
- Sec. 4.12, p. 1, 10/23/96 of the current MRP.

- Sec. 4.13, pp. 1-12, 04/15/15 (plus attachments) of this submittal replaces
- Sec. 4.13, (no page number), 12/01/91 of the current MRP.

PRT Comments

The Chapter 7 plan has been updated to reflect the recent changes to the SMCRA permitted areas at the PRT Wellington property. Obsolete figures are also being removed from Chapter 7 of the MRP. Figures 724.1 through 724.6 are being removed from Chapter 7 of the MRP. These figures present plots of monitored parameters at various monitoring sites from 1985 through 1991. These graphs are obsolete (now 24 years old) and the pertinent information (including subsequently collected monitoring data) has been submitted to the Division's electronic database for analysis and review. Similarly, Appendix 7.28-2 is being removed from Chapter 7 of the MRP. The information in Appendix 7.28-2 consists of graphs of monitored parameters at various monitoring sites from 1985 to 1993. These graphs are obsolete (more than 20 years old) and the pertinent information (including the subsequently collected monitoring data) has been submitted to the Division's electronic database for analysis and review. The Chapter 7 text has been modified to remove reference to Appendix 7.28.2. Similarly, several obsolete data tables that were presented in the text of the chapter have been removed. These tables were removed because the current hydrologic information has been submitted to the Division's electronic water quality database and is readily accessible for analysis.

The hydrologic monitoring plan for groundwaters and surface waters has been consolidated into a series of tables and text. The intention was to modify the plan to reflect the new changes in the SMCRA permitted area, and to streamline the information into a concise, less ambiguous format. A new water monitoring map (E9-3451) was produced to reflect the changes to the plan. This map replaces the old E9-3451 map.

MRP Insertion Instructions:

- Table of contents page through end of section 7.22: replace these old pages (12 total) with corresponding new pages (12 total)
- The next 29 pages in existing chapter (beginning with GW-2 slug test and ending with Table 7.22-13) are unchanged and remain in the document
- Section 7.23 page 1 - Sampling and Analysis through Section 7.24 page 6 (8 pages) to be replaced with corresponding new pages (8 pages)
- Table 7.24-1: unchanged (1 page)
- Table 7.24. 2: to be deleted (1 page) remove from chapter

- Table 7.24-4: unchanged (9 pages)
- Table 7.24.5: to be deleted (1 page) remove from chapter
- Table 7.24-6: to be deleted (8 pages) remove from chapter
- Table 7.24-6a: to be deleted (3 pages) remove from chapter
- Track Hopper water quality sample report with lab sheets– unchanged (4 pages)
- Figure 7.24-1: to be deleted, (4 pages), remove from chapter
- Figure 7.24-2: to be deleted, (4 pages), remove from chapter
- Figure 7.24-3: to be deleted, (4 pages), remove from chapter
- Figure 7.24-4: to be deleted, (4 pages), remove from chapter
- Figure 7.24-5: to be deleted, (2 pages), remove from chapter
- Figure 7.24-6: to be deleted, (3 pages), remove from chapter
- 7.25 baseline cumulative impact area information through 7.28 Seasonal Fluctuations page 10 (15 pages): replace these old pages with the corresponding new pages (15 pages)
- Table 7.28-3 (2 pages): unchanged
- Table 7.28-3b (1 page): unchanged
- Table 7.28-3c (1 page): unchanged
- Table 7.28-3d page 10d through 7.28 References (27 pages): remove old table, replace these old pages with the corresponding new pages (27 pages)
- Appendix 7.28-1 (5 pages): unchanged
- Appendix 7.28-2 (19 pages): deleted, remove from chapter
- 7.29 Cumulative hydrologic impact assessment (CHIA) (R614-301-729) through 7.31 page 8 (16 pages), remove old, replace with new pages (22 pages)

- Appendix 7.31-1 (5 pages): unchanged
- 7.32 page 1 in existing chapter through 7.52 page 2 (38 pages): remove old pages, replace with new pages (38 pages)
- Typical Wattle Installation (1 page): unchanged
- Silt Fence drawing page (1 page): unchanged
- Straw Bale Barrier page (1 page): unchanged
- 7.53 Impoundments and Discharge Structures, through 7.60 page 2a (6 pages): remove old pages, replace with new (6 pages)
- JBR Calculations – C1 and drawings through E9-1764B (11 pages): unchanged
- 7.65 Permanent casing and sealing of wells through (1 page): remove old page, replace with new (1 page).

PRT Comments

The R645-301-800 regulations have been updated. Bond release considerations and bond amount adjustments will be forthcoming following approval of the postmining land use change.

MRP Insertion Instructions:

- Sec. 8.00, pp. 1-2, 04/15/15 of this submittal replaces
- Sec. 8.00, p. 1-2, varies dates (including the SUPPLEMENT BOND COMPUTATIONS attachment of the current MRP.

PRT Comments

A review of the MRP maps was conducted. The maps applicable to the new postmining land use changes have been revised for this submittal. These maps include:

A. Permit Area, Facilities Map. This has always been the “go-to” map for the Wellington site that identifies specific facilities and areas on the property.
B. A map has been prepared to show the proposed Current Land Uses; it differentiates between “Industrial” and SMCRA areas.
C. A new map has also been prepared to show the proposed Postmining Land Use changes along with the new permit area boundaries.
D. Another map has been provided that shows the Disturbed Areas to be reclaimed through the state R645 rules and federal SMCRA regulations.
E. A new Hydrologic Monitoring Map that reflects the new monitoring plan has also been provided.
F. Modifications to the Hydrologic Evaluation Map have been made and included in this submittal.

MRP Insertion Instructions:

- Map E9-3341, March 2015 of the submittal replaces
- Map E9-3341 of the current MRP

- Map E9-3343 (1), March 2015 of the submittal replaces
- Map E9-3343 (1) of the current MRP

- Map 412.01, March 2015 of the submittal replaces
- Map 412.01 of the current MRP

- Map E9-3333, February 2015 of the submittal replaces
- Map E9-3333 of the current MRP

- Map E9-3451, March 24, 2015 of the submittal replaces
- Map E9-3451 of the current MRP

PRT Comments

If the attached revision qualifies as a *Significant Revision*, a public notice will be required. Therefore, a draft public notice for this revision has been included with the document.

Instructions

According to R645-303-220, this document may be considered an *Amendment* to the permit. However, if R645-301-414 applies here, the document will probably be considered a *Significant Revision* to the permit. If the latter is the case, a public notice would be necessary. If applicable, following a review of the attached draft public notice by the Division, PRT will follow the procedures in R645-300-120.

2.41 General Requirements (R645-301-241)

The topsoil borrow plan has been determined by two different methods. A worst-case scenario has been included to represent the existing conditions in the permit area as of this date and ~~will~~ has been ~~be~~ used~~as the basis~~ for ~~of~~ the bond~~ing~~ calculations. A best-case scenario ~~is~~ has also been included to account for the very real possibility that the fines will eventually be ~~re-mined and~~ removed from the site. As a reclamation activity, the fines are currently being extracted from the slurry ponds and taken to a nearby co-generation facility. This scenario serves as the basis for the release of a part of the permit which formerly contained one of the previous potential topsoil borrow areas. Together, these ~~methods~~ scenarios ~~will~~ provide ~~for whichever is~~information for ~~the~~ final reclamation plans ~~for~~ at the ~~permit area~~site.

This facility was constructed prior to SMRCA and has less than 4,000 cy of topsoil stockpiled for reclamation (see Dwg E9-3341). To meet the worst-case scenario ~~1,031,300~~1,032,300 cy of soil material is needed (Table 2.41-1). This involves disturbing additional lands within the permit area. Soil investigations reports are included for potential Topsoil Areas ~~H, E, D and G~~C, D and E for this scenario. The best-case scenario preserves this undisturbed land, except for a limited area in Area ~~H~~C, by utilizing soil material salvaged during regrading of the Clearwater and Lower Refuse Dikes and requires only 539,300 cy (Table 2.41-2).

All of the undisturbed potential topsoil borrow areas have been sampled extensively. The Clearwater and Lower Refuse Dikes have substantial as-built information in the Hydrology Appendix, 77.216-2(6) - Construction History Attachment; on Drawing E9-1764, (1764A, 1764B), Drawing E9-3460A, and in the Geotechnical Investigation by Rollins, Brown and Gunnell, 1983. Sampling in the identified borrow areas indicates that the soil materials are of adequate quality and quantity for the successful revegetation of the entire disturbance in the permit site.

Section 2.22 provides a detailed history of soil sampling in the borrow areas. The results of the field studies and laboratory analyses are also included in this section.

Topsoil and Substitute Requirements

The reclamation plan in Sec. 3.41 describes the borrowed topsoil and substitutes required. Appendix J calculates the volumes, depths and acreage required to achieve the plan for this worst-case scenario. Thus, the total amount of topsoil borrow required is 1,032,300~~1,031,300~~. The best-case scenario, which is intended to minimize total disturbance by maximizing the use of material in the dikes, requires 539,300 cy. To summarize the requirements necessary for borrow soils and substitutes for both scenarios, the reclamation plan requires the following:

Main Plant Area

The 44.6 acre area around the main plant area has been heavily used and compacted. This area will receive no additional soil from the topsoil borrow areas since it was disturbed prior to 1977. The small piles of coal wastes will be removed and deposited on the C~~c~~oarse R~~r~~efuse pile.

River Pumphouse

The river pumphouse area ~~will~~ would have required 6 inches of borrowed topsoil to cover ~~cover it. The required volume of borrow topsoil was estimated to be 3,000 cy. The material would be imported from the adjacent Topsoil Borrow Area G in the worst-case-scenario (see Dwg.G9-3511). In the best- case scenario, the material would be supplied by the Lower Refuse Dike~~but it has been re-seeded and the postmining land use here has been changed to *industrial*.

Coarse Refuse Pile

This site would be covered with four feet of coarse-grained Stormitt soil material from Topsoil Borrow Area ~~H~~ C for both scenarios. Approximately 43,300 cy of material would be required for a four foot cover. Some grading of the perimeter would be done to consolidate the coarse refuse and reduce the existing area to be covered by 7%.

Upper and Lower Refuse Slurry Ponds

For the worst-case scenario, the upper (81.2 acres) and lower (71.5 acres) refuse slurry ponds would be covered with four feet of soil materials (985,000 cy). The first two feet would be fine-grained subsoil and substrate from Topsoil Borrow Area E (492,500 cy), followed by two feet of coarse-grained topsoil from Topsoil Borrow Areas C and D~~, G and H~~ as well as both of the dikes. A capillary break would be established at the boundary between the lower two feet of fine-grained materials and the upper two feet of coarse-grained topsoil materials. The capillary break would help prevent migration of salts and metals from the lower two feet of cover upwards into the topsoil material.

For the best-case scenario, an operator will have successfully removed all of the coal fines in both the upper and lower refuse ponds. Washed tailings will have been redeposited into the upper pond. The washed tailings have been analyzed in a bench scale test and are reported to be non-toxic (see See. 7.28, pg. 25, 12/05/97). The lower pond will be returned to natural topography. Drawing 9704-T4 illustrates a cross section of the reclamation slope drawn through both ponds. The reference line for this section is shown on Drawing G9-3511. Thus this scenario requires that only the upper pond be covered with four feet of cover. Further, some consolidation of this pond will reduce the area to be covered to 76.4 acres.

Reclamation will begin with the redistribution of the coarse slurry pile to the upper refuse pond. The four foot cover will begin with one foot of impacted soils that are removed from the lower basin after mining. Some testing has been done on samples obtained by drilling in May 1997 which indicate that this soil could well meet the criteria required in Table 2 of the Guidelines. The next one foot will come from the impacted soils immediately under the coarse slurry pile. The final two feet will be available from the regrading of the lower refuse dike and the Clearwater Dike. This material is described elsewhere and it is known to have originally been taken from the immediate area which has since been well characterized. This material is the best available material without disturbing additional lands. However, actual characterization will be performed in the near future by drilling.

Coarse Slurry Pile

For both scenarios, the material in the Coarse Slurry Pile and any natural soil material that was impacted would be relocated onto the Upper Slurry Pond prior to the final cover material being placed on it. Therefore, no topsoil borrow is necessary for this area.

Clearwater Dike

For both scenarios, the dike would be removed and the suitable soil materials (151,000 cy) used in the topsoil redistribution plan for the reclaimed areas (see Drawing E9-1764B). The unsuitable materials (outer layer of dike and pond bottom sediments) would be removed to the upper slurry pond and covered. This material is the best available material without disturbing additional lands. However, actual characterization will be performed in the near future by drilling. The dike materials identified as topsoil borrow would also be tested onsite during excavation. Each material would be tested for texture, pH, SAR prior to distribution. The cleared site would then be reclaimed by using existing native soil materials daylighted with the removal of dikes and pond sediments.

Lower Refuse Dike

In the worst-case scenario, this dike is regraded to a 5:1 slope which makes 29,700 cy topsoil material available. Two feet of the top and downstream so that this suitable topsoil material could be redistributed as the topsoil cover on the slurry ponds (Drawings E9-1764A and E9-3460A). The suitable materials would originate from the upper portion of the dike that would not have been exposed to contaminants from the slurry pond water either through direct contact or through capillary action. Calculations are attached illustrating the amount of topsoil material to be salvaged. Any unsuitable materials excavated during the borrow operation would be removed to the slurry pond and covered as waste.

In the best-case scenario, this dike is regraded entirely to natural topography which creates 107,400 cy of topsoil material. This would be distributed on the upper pond as part of the final two feet of cover. Any unsuitable materials excavated during the borrow operation would be removed to the upper slurry pond and covered as waste.

This material is the best available material without disturbing additional lands. However, actual characterization will be performed in the future. The dike materials identified as suitable soil borrow materials would be tested on-site during excavation. Each soil material type would be tested for texture, pH, EC, and SAR prior to distribution. The cleared portion of the dike would be reclaimed by using existing suitable native soil materials daylighted with the removal of the borrow.

Proposed Topsoil Borrow Areas

Numerous studies have been conducted to identify and characterize topsoil borrow areas and are included in Section 2.22 of the MRP. Currently, eight separate borrow areas have been identified, mapped and soils investigations completed. See Map G9-3511 for locations and boundaries of borrow areas. Below is a description of all the Topsoil Borrow Areas with the volumes of material available and management restrictions:

Topsoil Borrow Area A

The soils in this area have been recently identified as "critical farmland" by the NRCS, and thus, are no longer available for borrow.

Topsoil Borrow Area B

The land within Area B ~~and most of adjoining Area C~~ is involved in ~~a proposed land sale to develop an~~the industrial area, and thus, is not available for borrow in the future.

Topsoil Borrow Area C

~~Most of the land within Area C is involved in the aforementioned land sale and would not be available for borrow. Approximately 13 acres of the eastern portion of Area C is not involved in the land sale and was incorporated into the new Area H.~~ Soil sampling results (Section 2.22) suggested that this area could be salvaged to a depth of 8.75 feet and still allow 1.5 feet of suitable material to remain in the area to be reseeded.

Topsoil Borrow Area D

The soil investigation of six soil pits plus Neico-7 soil pit indicates that 175,429 cubic yards of good topsoil material is available. Most of the borrow would come from Gerst, Juva Variant, and Stormitt soils in the northern portion of the Area. The proposed average topsoil borrow depth is 3.5 feet. This will allow for positive drainage from Area D. See Soil Borrow Investigation - Area D (~~attached~~Section 2.22). In the best-case scenario, no disturbance of this area would be necessary.

Topsoil Borrow Area E

The soils investigation (see Section 2.22, 7th Sample Period) indicates that the surface soils and the deep substrate in ~~A~~ E is suitable topsoil material as defined in Table 2. The subsoils and the shallower substrates are not suitable as topsoil but would be suitable as fill, and as fine-grained material would provide a two foot capillary break in the four-foot cover over the slurry ponds. In the best-case scenario, no disturbance of this area would be necessary.

For the worst-case scenario, the surface soils would be removed between a depth of four to nineteen inches and stored on-site. The subsoils and shallow substrates would be borrowed as fill to a depth of about 6.5 feet (492,550 cy). In addition, the slickspots, as unsuitable material (about 87,000 cy), would be removed and distributed on the slurry ponds as waste and would not be counted as part of the fill. Since the slickspots phenomena is concentrated in the surface and subsoils, the actual amount that may need to be excavated may be less. Field testing during excavation would determine the actual amount and depth of material that needs, to be treated as soil waste. The remaining substrate would be suitable material only to facilitate revegetation.

The substrates are very deep, at least 122 inches; thus, the redistribution of the surface soils over the deep substrates (about 44 inches) plus the addition of an average of 12 inches of surface soils would provide a 58 inch deep seedbed of loams and silt loams for revegetation.

Once excavation is complete and the borrow and waste materials removed, the remaining substrate would be ripped to lessen compaction prior to redistribution of the stored surface soil materials. The surface soil materials would be re-distributed evenly over the substrates and an irregular surface left to provide micro-niches for plant growth.

The groundwater table fluctuates between 84 to 180 inches so the depth over the high groundwater level would be at least 6 inches. The only material in contact with the groundwater would be deemed suitable material and be low in salts and metals. The natural occurrence of high salts in the soil profiles indicates that salty groundwater is depositing salts in the subsoils and upper substrates during high water tables. See Soil Borrow Investigation - Area E (~~attached~~Section 2.22).

Topsoil Borrow Area F

The very shallow soils over the Mancos Shale are unsuitable for borrow.

Topsoil Borrow Area G

The estimated volume of Gerst soil materials in this 119 acre area is 12,570 cy based on 17 inches of available topsoil after leaving 18 inches in-situ for revegetation. For the worst-case scenario, the topsoil borrow would be redistributed as the upper two feet of the cover on the slurry ponds (9,550 cy). ~~An estimated 3,000 cy would be distributed to the pumphouse site.~~ The only suitable soils for borrow area the Stormitt soils on crests of the hills and ridges (Soil Report G - Section 2.22). See Soil Borrow Investigation - Area G (attached).

In the best-case scenario, no disturbance of this area would be necessary.

Topsoil Borrow Area H

Area H is composed of 13 acres of the old Area C and lands adjoining the Area C on the south and southeast. A recent soils investigation established that 179,332 cy of Stormitt series topsoil material was available on the tops of the knolls and ridges (Section 2.22~~, 8th Sample Period~~). This coarse-grained topsoil material is suitable for redistribution in the reclaimed areas. ~~Approximately 43,300 cy of soil material would be used to cover the Coarse Refuse Pile on the west side of the river for both scenarios. This quantity of material (and more) is available in the vicinity of test pits C-1, EA-3, EA-4, EA-5. For th worst-case scenario, the remainder (136,032 cy) would be placed on the Slurry Pond(s). See Soil Borrow Investigation - Area H (attached).~~ In an attempt to minimize disturbance to native areas, Topsoil Borrow Area H will not be used as borrow material for reclamation. Soil sampling results will remain in the MRP so it can be classified as a "potential" borrow area if there is a need for it in the future.

Clearwater and Lower Refuse Dikes

Through analyses of as-built drawings of the dikes, it was established that Gerst soil material is available in each dike. Since this facility was constructed prior to SMRCA and only very minimal topsoil is stockpiled, it is prudent to use as much of these dikes as possible. It minimizes disturbance to undisturbed lands that otherwise would have to be a source of topsoil borrow.

The Clearwater Dike contains about 166,100 cy of material. The suitable material for redistribution is calculated to be about 91% of this or 151,000 cy (see Dwg. E9-1764B). Regrading this dike to natural topography will be required in both scenarios.

The Lower Refuse Dike contains a minimum of 29,700 cu. This is the amount that will be used in the worst-case scenario. In the best-case scenario, this dike would be regraded to its natural topography and creates 110,400 cy of available topsoil material (see Dwg. E9-1764A).

~~Actual c~~Characterization of both dikes will be performed according to~~per~~ Table 2 of the DOGM Soils Guidelines will be performed in the near future by drilling. The dike materials identified as suitable soil borrow material would also be tested on-site during excavation. Each soil material type would be tested for texture, pH, EC, and SAR prior to distribution. The cleared portion of the dike would be reclaimed by using existing suitable native soil material daylighted with the removal of the borrow.

Table 2.41-1 is a summary of the reclamation sites and sources of topsoil for the worst-case.

~~**Table 2.41-1: Summary of Reclamation Sites and Topsoil Distribution - Worst Case**~~

~~**Reclamation Site**~~	~~**Topsoil & Cover Required cy**~~	~~**Sources of Borrow & cover by Topsoil Borrow Area cy**~~
~~River Pumphouse~~	~~3,000~~	~~Area "G"~~
~~Coarse Refuse Pile~~	~~43,300~~	~~Area "H"~~
~~Slurry Ponds~~	~~985,000~~	~~Area "D" - 175,400~~ ~~Area "G" - 9,550~~ ~~Area "E" - 492,500~~ ~~Area "H" - 136,050~~ ~~CW Dike - 151,000~~ ~~LR Dike - 29,700~~
~~Coarse Slurry Pile~~	~~0~~ ~~redistributed to slurry pond~~	~~0~~
~~Totals~~	~~1,031,300~~	~~1,040,500~~

Table 2.41-1: Summary of Reclamation Sites and Topsoil Distribution - Worst Case

Reclamation Site	**Topsoil & Cover Required cy**	**Sources of Borrow & cover by Topsoil Borrow Area cy**
River Pumphouse	0 Industrial Area	0
Coarse Refuse Pile	43,300	Area "C" - 43,300
Slurry Ponds	985,000	Area "C" – 145,600 Area "D" - 175,400 Area "E" - 492,500 CW Dike - 151,000 LR Dike - 29,700
Coarse Slurry Pile	0 redistributed to slurry pond	0
Dryer Pond Pile*	4000	Area "C" – 3,000 Topsoil #3 Pile – 1,000
Totals	1,032,300	1,041,500

* Estimated 3,500 – 4,000 cy approved and removed for track expansion (see letter to DOGM dated April 7, 2014).

Table 2.41-1 is a summary of the reclamation sites and sources of topsoil for the best-case.

Table 2.41-2: Summary of Reclamation Sites and Topsoil Distribution - ~~Worst~~ Best Case

Reclamation Site	Topsoil & Cover Required cy	Sources of Borrow & cover by Topsoil Borrow Area cy
River Pumphouse	~~3,000~~0 Industrial Area	~~Lower Refuse Dike 3,000~~0
Coarse Refuse Pile	43,300	Area "~~H~~C" 43,300
Slurry Ponds	493,000	CW Dike - 151,000 LR Dike - 107,400 Impacted soils: LR basin & Coarse Slurry Pile -246,500
Coarse Slurry Pile	0 redistributed to slurry pond	0
Totals	~~539,300~~536,300	~~551,200~~548,200

Soil Monitoring for Reclamation

The soil profile analyses have been completed for the designated topsoil borrow areas. The specific pedon information will be used to identify horizons that may be unsuitable for substitute topsoil material. As the identified potentially unsuitable horizons are uncovered during the borrow operation, on-site testing will be conducted to determine the material that was unsuitable and may not be available as borrow. The on-site testing includes texture, pH, EC, and SAR. The on-site results will be used to determine whether the material should remain in the pit or be diluted with suitable material for borrow. The unsuitable material remaining in the borrow pit would be buried and covered with 18 inches of suitable material for revegetation.

3.41 REVEGETATION REQUIREMENTS (R645-301-341)

Description of Disturbed Areas

Approximately 392 acres have been identified as disturbed at the Wellington site. There are five disturbance types (areas) with varied degrees of severity within the boundaries of the Wellington permit. The types (areas) are: 1) Surface Facilities, 2) Coarse Slurry, 3) Coal Storage & Processing Area, 4) Coarse Refuse, and 5) Slurry Ponds.

Surface Facilities Area

The Surface Facilities Area, located west of the Price River, probably has been less impacted than any of the five disturbance types. This area is located around the offices and the old coal preparation plant (Dwg. E9-3341). The soils of this area have been compacted by vehicles, heavy equipment and general surface facility and operations.

Coarse Slurry Area

The next disturbance type on the property is the Coarse Slurry Area [or Coarse Slurry (Pond) Refuse Pile]. This area was created from by-products of the coal cleaning process while under management of the previous owners. The area is located east of the Price River and west of the slurry pond basins (Dwg. E9-3341). Soil samples as well as the plant species that currently exist on this area suggest that there is little or no toxicity problems that would inhibit growth of plants to be established at the time of final reclamation. Furthermore, the texture is more coarse and therefore, could be somewhat more desirable than some of the native soils of the area. However, these areas are grey to black in color which could create warmer surface temperatures and increase evaporation of natural precipitation of the reclaimed surfaces. This, of course, could inhibit establishment of some species at the time of germination, when they are most vulnerable to mortality.

Coarse Refuse Area

Also located west of the Price River and just southeast of the Surface Facilities Area, is another disturbance type at Wellington called the Coarse (Plant) Refuse Area. The Coarse Refuse Area is made up of material discarded from earlier coal cleaning operations. The pile consists mainly of black, shaley waste material initially sized at nearly 10 inches in diameter.

A relatively small area of these piles has also been designated for a storage area for spoils and non-hazardous wastes from clean-out material of the sediment pond from the Crandall Canyon Mine (see Sec. 5.28). This material will be placed on the coarse refuse material in separate piles, but in the same general area. Final contours of the coarse refuse piles will simulate a natural plateau, a common landform of the undisturbed area.

Coal Storage & Processing Area

This area ~~is the site for most of the current operations~~was once used by a previous owner at Wellington, Genwal Coal Company. It is located between the old Surface Facilities area and the main extent of the Coarse Refuse Piles (Dwg. E9-3341). Coal from the Crandall Canyon Mine ~~has been~~was processed, stored and loaded by rail in ~~recent~~ those operations ~~at Wellington~~.

Slurry Pond Basin Area

Until recently the Slurry Pond basins were thought to be the most severely disturbed areas on the Wellington property, particularly the lower Slurry Pond. They are sediment pond basins from early coal cleaning operations by previous owners. Earlier soil sampling (1983) suggested saline and/or sodic conditions, whereas more recent sampling (1994) did not (Sec. 2.22). The texture of this material was somewhat finer than that of other areas and is also black in color.

Modular Wash Plant

Another surface facilities area was once located at the Wellington site on the east side of the Price River. This area is where COVOL, TECHMAT and General Resources operated a fines wash plant. This site has been reclaimed. For more information about the reclamation refer to Section 5.15).

3.41 REVEGETATION REQUIREMENTS (R645-301-341)

Description of Disturbed Areas

Approximately 392 (only 0.36 acres of flotation cell site+ tank site) acres have been identified as disturbed at the Wellington site. This area is where COVOL, TECHMAT and General Resources operated a fines wash plant. This site has been reclaimed. For more information about the reclamation refer to Section 5.15).

Revegetation Methods for Each Disturbed Area

Additional Surface Facilities Area (Modular Wash Plant Area)

Following removal of the flotation cells and the slurry tank revegetation techniques will be implemented.

Soil Ripping
The access road to the flotation cells will be ripped to a minimum depth of one foot with rippers spaced a maximum of two feet apart. The cell and tank sites will have the construction materials removed but the sites will not be ripped due to the possibility of bringing mancos shale material to the surface.

Topsoiling
One foot of topsoil from the stockpiles will be applied to the flotation cells and tank sites but not to the access road, which has native soils in place.

Gouging
Gouging will be implemented in the topsoil material at the cell and tank sites but not in the access road because the ripping of the roadbed will leave the surface roughened. The steep slopes below the cell site will be ripped on the contour to provide furrows to increase moisture retention in the seedbed to facilitate seed germination and seedling growth. The rippers will be spaced four feet apart and ripped to a depth of 18 inches.

Fertilization
All of the area to be seeded will be fertilized with 80 lbs/acre of N and 80-160 lbs./acre of P. The exact amounts will be determined by final topsoil sampling and analyses.

Mulching
The area to be seeded will be mulched at the rate of two tons per acre of green alfalfa hay. The hay will be chopped and blown on to be incorporated into the seedbed by the subsequent action of the seed drill.

Seeding
The topsoiled an ripped areas will be drilled to place the seed at a 1/4-1/2" depth in the prepared seedbed. Seed mixture A for Atriplex-Hilaria plant community will be used for this area.

Revegetation Methods for Each Disturbed Area

Introduction

The following is a list of procedures in the order in which they will be employed at the time of final reclamation at the Wellington Preparation Plant. For descriptions of the following treatments, refer to "Planting and Seeding Techniques to Be Used For Reclamation" (Sec. 3.41).

Surface Facilities Area

Nearly all the surface facilities that were once used for coal cleaning activities at the Wellington site have been dismantled, demolished and/or removed including an electrical substation, coal cleaning building, heat dryer and conveyor, slurry pipeline, river pumphouse, coarse refuse bin, office building, storehouse, shop, coal carbonization laboratory, oil storage building, plant pumphouse, scrap metal material, hopper feed belt, truck dump, scales, etc. The only coal cleaning-related areas and structures that have not been removed and reclaimed in the surface facility area are those that are necessary for the current and proposed industrial activities; these include functioning ponds, roads, parking area pads and railroad structures. For a map that lists the reclaimed structures and shows those that remain onsite, refer to Dwg. E9-3341. For a map that shows the boundaries of the current land uses, refer to Dwg. E9-3343(1). Finally, for a map showing the disturbed areas associated with SMCRA regulations, refer to Dwg. E9-3333.

Following removal of all surface facilities, parking areas, and other structures that will not remain for post-mining land use (or the extended responsibility period), revegetation techniques will be implemented.

Soil Ripping

Following grading to blend in with the surrounding areas, soil ripping will be implemented in the Surface Facilities Area. The depth of the ripping will be one foot (1 ft).

Topsoil

Much of the area consists of compacted native topsoil that was never removed at the beginning of operation in 1957. No topsoil will be applied to cover the Surface Facilities Area at the time of final reclamation.

As a note about past test plots in this area, DOGM approved removal of the initial Surface Facility Test Plot that was constructed in 1984 by U.S. Steel Corp. with the condition that the operator construct a new plot testing different parameters in 1990. The new plot design recommended by DOGM included field trials of several single species and mixtures with no additional

topsoil (3 inches vs. 0 inches topsoil was tested in the 1984-85 test plot with positive results, but apparently no significant difference found between the two depths).

Gouging

Gouging is a surface configuration composed of a series of depressions in the ground to harvest water to enhance revegetation [see "Description of Planting and Seeding Techniques To Be Used (or Investigated) For Reclamation, Sec. 3.41]. Gouging will be implemented in this area.

3.41 37 11/10/94

Fertilization

The area will have approximately 80 lbs./acre N and 80-160 lbs./acre P incorporated into the final seed bed. These amounts will be confirmed following final topsoil sampling and analyses.

Seeding

The seed mixture that is presently recommended for final reclamation is also shown in this section of the MRP. However,

several species and mixtures are presently being tested within a reclamation test plot implemented in 1990. For more information refer to Section 3.41, "Reclamation Test Plots" and to Appendix A.

~~The seed mixture will be drilled using a rangeland drill in most areas. Other smaller and more localized areas will be broadcast seeded and covered.~~

~~*Mulch*~~

~~The entire area will be mulched at the rate of 2 tons per acre with certified noxious weed-free straw or alfalfa hay. The straw will be crimped (or otherwise tacked) to the ground.~~

Coarse Slurry Area

Topsoil/Soil

Recent soil sampling suggested no chemical problems with this area [see Results of Sample Areas of the Fifth Sampling Period", Sec. 2.22], especially if one considers new findings about Se and revegetation (see "Discussion of Soil Sampling", Sec. 3.41). However, the CS test plots did not produce enough vegetative cover to meet standards of the reference area [see Coarse Refuse (CR) Results, Sec. 3.41].

~~The Coarse Slurry area will therefore be covered with at least 4 ft of topsoil or other suitable material at the time of reclamation. Because it has been hypothesized that the poor results on the test plots may be due to a physical nature rather than a chemical one, the operator may propose additional test plots to test this hypothesis.~~

At the time of final reclamation, to reduce total footprint to be covered with 4 ft of substitute topsoil from the borrow areas, the coarse slurry material will be graded downward and placed onto the slurry pond fines.

Gouging

Gouging is a surface configuration composed of a series of depressions in the ground to harvest water to enhance revegetation [see "Description of Planting and Seeding Techniques To Be Used (or Investigated) For Reclamation, Sec. 3.41]. Gouging will be implemented in this area.

Fertilization

The area will have approximately 80 lbs./acre N and 80-160 lbs./acre P incorporated into the final seed bed. These amounts will be confirmed following final topsoil sampling and analyses.

Seeding

The seed mixture that is presently recommended for final reclamation is also shown in this section of the MRP. However, several species and mixtures are presently being tested within a reclamation test plot implemented in 1990. For more information refer to Section 3.41, "Reclamation Test Plots" and to Appendix A.

The seed mixture will be drilled using a rangeland drill in most areas. Other smaller and more localized areas will be broadcast seeded and covered.

Mulch

The entire area will be mulched at the rate of 2 tons per acre with certified noxious weed-free straw or alfalfa hay. The straw will be crimped (or otherwise tacked) to the ground.

Coarse Refuse Area

Topsoil

As noted in previous sections little or no desirable species were observed in each of the subplots of the CR Test Plot (see "Coarse Refuse (CR) Results", Sec. 3.41). The poor results may be for a variety of reasons, however, chemical analyses of the existing material showed high soluble and exchange salts to exist on the pile [see "Results of Sample Areas of the Fifth Sampling Period", Sec. 2.22 and "Discussion of Soil Sampling (1994), Sec. 3.41].

Because recent soils and test plot sampling both showed unfavorable results, the Coarse Refuse Pile will also be covered with 4 ft of material at the time of final reclamation.

Fertilization

The area will have approximately 80 lbs./acre N and 80-160 lbs./acre P incorporated into the final seed bed. These amounts will be confirmed following final topsoil sampling and analyses.

Contour Trenching

Because the Coarse Refuse Area will have significant side-slopes, contour trenching or furrowing may be practical to provide
better results in plant cover on the slopes. These trenches are described in Sec. 3.41, "Planting and Seeding Techniques to Be Used For Reclamation".

Gouging

Gouging is a surface configuration composed of a series of depressions in the ground to harvest water to enhance revegetation [see "Description of Planting and Seeding Techniques

To Be Used (or Investigated) For Reclamation, Sec. 3.41]. Gouging will also be implemented on the level areas and slopes of Coarse Refuse site.

Seeding

The seed mixture that is presently recommended for final reclamation is also shown in this section of the MRP. However, several species and mixtures are presently being tested within a reclamation test plot implemented in 1990. For more information refer to Section 3.41, "Reclamation Test Plots" and to Appendix A.

The seed mixture will be drilled using a rangeland drill in most areas. Other smaller and more localized areas will be broadcast seeded and covered.

Mulch

The entire area will be mulched at the rate of 2 tons per acre with certified noxious weed-free straw or hay. The straw will be crimped or otherwise tacked to the ground.

Coal Storage and Processing Area

Removal of Coal Material

As described earlier, this area was used for coal storage and processing of coal product for the Crandall Canyon Mine. Some coal material currently remains on the surface in the area. Recent soil sampling for a proposed project suggested there may be elevated levels of boron which could affect plant growth at the time of final revegetation. ~~Therefore, prior to implementing revegetation techniques in the area, and if~~ If the material has not been sold or removed as coal product, and if the permittee decides to restore vegetation to the area, the coal material will placed on the Coarse Refuse Pile that lies adjacent to the Coal Storage and Processing Area prior to re-seeding it. There is, however, the very real possibility that this pad area will be needed for the industrial activities and therefore reclaimed as such (not revegetated). In that case, if the coal material has not been sold or removed, it will be covered with fill or other material to create an industrial pad site.

The following treatments will only be implemented if the current pad site is reclaimed to vegetation and not to an industrial pad site.

Soil Ripping

To relieve compaction following grading to blend in with the surrounding areas, soil ripping will be implemented in the Coal Storage and Processing Area (if necessary). The depth of the ripping would be one foot (1 ft).

Topsoil

The area will be topsoiled with 6 inches of topsoil from the borrow area

Gouging

Gouging is a surface configuration composed of a series of depressions in the ground to harvest water to enhance revegetation [see "Description of Planting and Seeding Techniques To Be Used (or Investigated) For Reclamation, Sec. 3.41]. Gouging will be implemented in this area.

Fertilization

The area will have approximately 80 lbs./acre N and 80-160 lbs./acre P incorporated into the final seed bed. These amounts will be confirmed following final topsoil sampling and analyses.

Seeding

The seed mixture that is presently recommended for final reclamation is also shown in this section of the MRP. However, several species and mixtures are presently being tested within a reclamation test plot implemented in 1990. For more information refer to Section 3.41, "Reclamation Test Plots" and to Appendix A.

The seed mixture will be drilled using a rangeland drill in most areas. Other smaller and more localized areas will be broadcast seeded and covered.

Mulch

The entire area will be mulched at the rate of 2 tons per acre with certified noxious weed-free straw or alfalfa hay. The mulch will be crimped of otherwise tacked to the ground.

Slurry Pond Basin Area

Soil Ripping

Soil Ripping may be implemented in the Slurry Pond Area if heavy equipment used for reclamation to distribute materials compacts the area. Otherwise, little ripping may be needed because so much of the area will be unconsolidated with the addition of material i.e. substitute topsoil and/or coarse slurry.

Topsoil/Substitute

The soil sampling in this area resulted in relatively high levels of Se and B. Because DOGM's standards considers the levels in these slurry fines as "unacceptable", 4 ft of substitute cover will be placed over them.

Gouging

Gouging is a surface configuration composed of a series of depressions in the ground to harvest water to enhance revegetation [see "Description of Planting and Seeding Techniques To Be Used (or Investigated) For Reclamation, Sec. 3.41]. Gouging will be implemented in this area.

Fertilization

The area will have approximately 80 lbs./acre N and 80-160 lbs./acre P incorporated into the final seed bed. These amounts will be confirmed following final topsoil sampling and analyses.

Seeding

The seed mixture that is presently recommended for final reclamation is also shown in this section of the MRP. However,
reclamation test plots testing single plant species and mixtures were implemented in 1990. For more information refer to Section 3.41, "Reclamation Test Plots" and to Appendix A.

The seed mixture will be drilled using a rangeland drill in most areas. Other smaller and more localized areas will be broadcast seeded and covered.

Mulch

The entire area will be mulched at the rate of 2 tons per acre with certified noxious weed-free straw or hay. The mulch will be crimped into the ground.

Price River Riparian Area

This area was reclaimed, first by removal of the pumphouse building, then by filling in the foundation and basement rooms of the building. It was gouged and seeded with the final revegetation seed mixture.

Fertilization

The area will be fertilized with approximately 80 lbs./acre N and 80-160 lbs./acre P incorporated into the final seed bed. These amounts will be confirmed following final topsoil sampling and analyses.

Seeding

The total area to be reclaimed in the Price River riparian area is relatively small. From a recent field visit to the area (March 27, 1995) with representatives from NEICO (P. Collins) and DOGM (P. Baker), it was determined that the total disturbance to the riparian area was probably less than 1 acre. The area will was therefore be broadcast seeded with the riparian seed mix (see "Revegetation Seed Mixture C").

Because of the relatively small surface area, it was suggested that specific standards of revegetation success be determined, rather than selection of a reference area (see "Measures to Determine Revegetation Success" in the following pages).

Seedling Planting

It was also recommended during the aforementioned field visit that the riparian area could be planted with willow seedlings if appropriate willow stands could be located within the immediate area where cuttings could be made.

Another field trip was later made to identify appropriate areas to be used to make future willow cuttings for reclamation. An area was not located. Although some willow individuals were found, tamarisk trees have evidently invaded nearly all riparian areas with the exclusion of good stands of willow and other desirable woody plant species.

It is therefore recommended that the disturbed riparian areas of the Price River be seeded with a seed mix different than those recommended for the upland areas. This mixture should have desirable grass, forb and shrub plant species. For a seed mixture recommended for this area, refer to "Revegetation Seed Mixture C". Unless an appropriate borrow area for willow cuttings is identified in the future, no seedlings will be planted in this area.

Little has been done to determine whether or not final revegetation success standards have been met because the site is included in an area where the postmining land use will be "industrial". The area is an approved point source to access Price River water and the landowner has valid water rights to do so.

TOPSOIL BORROW AREAS

The areas used to borrow substitute topsoil will also be graded to blend in with the natural surroundings (Sec 7.60) and seeded with the appropriate seed mixtures, or Borrow Areas "C" and "D" (Revegetation Seed Mixture A) and Borrow "E" (Revegetation Seed Mixture B) ~~Area "A" (Dwg. G9-3511) will return to cropland. Area "E" will be seeded with Species Mixture B.~~

4.12 RECLAMATION PLAN (R645-301-412)

Premining Land Use

Records from previous owner, U.S. Steel Corp. [p. 784-29 (Rev. 1:6-30-83)], and later determined by the 1984 State Permit Decision Package [see DOGM TA (2/9/96)] indicate that the pre-disturbance use of land that is currently occupied by the slurry pond and impoundment east of the Price River was “undeveloped land”. The pre-disturbance use of the areas west of the Price River that is currently occupied by the railroad and ~~processing plant~~ transloading facilities was also “undeveloped land” and “probably supported limited grazing” (from the same references mention above).

~~The postmining land use of all disturbed areas (including the topsoil borrow areas) following final reclamation will remain consistent with the premining land use which is "undeveloped" with "limited grazing" (unless, as discussed previously, some areas are changed in the future to an "Industrial" postmining land use). This has been approved by the state in the 1984 state Permit Decision Package [see DOGM TA (2/9/96)].~~

~~For more information about premining, current and postmining land use, refer to section 4.11 of this document.~~

4.13 PERFORMANCE STANDARDS (R645-301-413)

Postmining Land Uses

Following is a description of the proposed postmining landuses for the Wellington Prep Plant site.

Undeveloped Lands - Previous operations and reclamation plans shows that most of the disturbed areas will be returned to the premining land use of “undeveloped land”. The postmining land use for much of the disturbed areas is “undeveloped land with limited grazing”, but some areas described below will have other uses.

Cultivated Lands - As mentioned previously, much of the disturbed land at the Wellington Preparation Plant will be returned to “undeveloped land with limited grazing”. One exception is an area that is presently cultivated lands. This area is irrigated and presently functioning as crop- and pasture-lands. This area will also be used as similarly following final reclamation. The area has been shown on a map previously submitted to the State of Utah, Division of Oil, Gas & Mining (see Dwg. E9-3343).

Following final reclamation, the same farmers/ranchers are expected to use the areas as crop- and pasture-lands. If any of these land users should discontinue their current operations, it is not anticipated that it would be difficult to find others to take their place since crop- and pasture-lands and irrigation water is a limited resource in Carbon County. The owner will manage the farmers/ranchers who use these lands. Irrigation water rights have been retained for these uses.

The crops planted vary from year to year and are sometimes rest/rotated. The primary corps planted have been alfalfa, corn and pasture grasses (see Section 4.11). This is expected to continue in the future for postmining land. As an average, the postmining standard for annual crop production should be approximately 6,500 lbs. per acre for alfalfa and 5,500 lbs. per acre for corn and 3,000 lbs per acre for pasture grasses. For a map showing existing cultivated land, refer to Dwg. E9-3343.

Slurry Removal - One of the current activities at the Wellington site that is working in conjunction with ongoing reclamation of the area is the removal of slurry fines material from the area east of the Price River. An amendment to the MRP was approved to remove these fines from the slurry cells as part of the reclamation process – they are being used at a nearby co-generation power plant. This practice is a prudent environmental practice because reclamation may be less costly and more easily accomplished in those areas where the fines have been removed. Subsequent to the fines removal operations, this area will be reclaimed to the approved postmining land use.

Industrial Area - One exception to returning the postmining land use to that of its premining use is a specific area that will be used for “industrial” purposes. This area is shown on Map 412.01 and is well-suited for industrial activities. Furthermore, it is an area that has been previously zoned as “heavy industrial” by Carbon County. The area is shown on Dwg. 412.01.

Postmining Land-Use Change

In order to utilize a specific area as an industrial site, the approved postmining land use will be changed. The survey description of this area is shown below.

Industrial Area West (Excluding SMCRA areas)

Legal Description:

Legal description of lands in Sections 8, 9, 16 and 17, Township 15 South, Range 11 East, Salt Lake Base & Meridian, Carbon County, Utah, based on the Utah State Plane Coordinate System NAD 83, Utah Central Zone, with a Grid bearing of 0° North, described as follows:

> Beginning at the South Quarter Corner of said Section 8; thence N01°06'56"W along the West line of the Southeast Quarter of said Section 8, 719.00 feet to the South right-of-way line of Ridge Road; thence along said right-of-way line the following five calls, N35°01'15"E 720.83 feet; thence N40°21'23"E 191.50 feet; thence N51°02'47"E 170.91 feet; thence N58°26'22"E 84.22 feet; thence N63°26'57"E 4812.25 feet to the East right-of-way line of Farnham Road; thence along the East right-of-way line of Farnham Road the next forty calls, S10°27'35"E 363.06 feet; thence S07°39'30"W 150.43 feet; thence S25°37'13"W 92.24 feet; thence S32°13'31"W 141.37 feet; thence S35°35'30"W 374.58 feet; thence S27°58'31"W 88.80 feet; thence S17°06'28"W 80.47 feet; thence S02°17'49"W 83.67 feet; thence S08°57'23"E 106.97 feet; thence S17°37'22"E 369.88 feet; thence S21°26'07"E 114.01 feet; thence S24°43'21"E 51.25 feet; thence S30°13'16"E 70.26 feet; thence S31°46'53"E 561.78 feet; thence S40°07'03"E 71.83 feet; thence S48°55'25"E 42.65 feet; thence S56°38'07"E 63.55 feet; thence S64°09'56"E 75.24 feet; thence S56°31'48"E 176.40 feet; thence S33°21'23"E 185.35 feet; thence S32°51'50"E 736.79 feet; thence S29°53'44"E 236.29 feet; thence S28°05'28"E 93.70 feet; thence S27°35'14"E 90.43 feet; thence S33°58'41"E 74.82 feet; thence S40°24'14"E 83.77 feet; thence S47°22'30"E 82.97 feet; thence S47°03'06"E 211.93 feet; thence S41°57'57"E 97.45 feet; thence S37°16'25"E 114.78 feet; thence S31°31'57"E 490.86 feet; thence S30°57'24"E 1046.91 feet; thence S26°16'25"E 108.52 feet; thence S10°49'23"E 113.02 feet; thence S02°25'51"W 132.68 feet; thence S00°55'25"W 96.53 feet; thence S16°11'50"E 59.33 feet; thence S31°51'10"E 52.13 feet; thence S45°41'16"E 106.35 feet; thence S45°00'12"E 110.32 feet to the South line of the Northeast Quarter of Section 16; thence along said Quarter Section line N89°12'02"E 259.34 feet to the East Quarter Corner of Section 16; thence along the East Section line of said Section 16 S00°43'43"E 2599.31 feet to the Southeast corner of said Section 16; thence along the South line of said Section 16 S89°13'01"W 5255.50 feet to the Southwest corner of Said Section 16; thence along the South line of Section 17 S88°33'24"W 1337.10 feet to the Southwest corner of the Southeast Quarter of the Southeast Quarter of said Section 17; thence N01°32'30"W 2615.85 feet along the centerline of the Southeast Quarter of said Section 17 to the Northwest corner of the Northeast Quarter of the Southeast Quarter of said Section 17; thence along the North line of the Southeast Quarter of said Section 17 S89°24'25"W 1325.36 feet to the center of said Section 17; thence along the centerline of said Section 17 N01°17'29"W 2630.95 feet to the point of beginning. The Basis of Bearing is N01°06'56"W between the South Quarter Corner and North Quarter Corner of Section 8, T15S, R11E, SLB&M as per the information on file at the Carbon County Surveyor's Office.

Excluding the SMCRA Area West as follows:

SMCRA Area West

Legal description of lands in Sections 16 and 17, Township 15 South, Range 11 East, Salt Lake Base & Meridian, Carbon County, Utah, based on the Utah State Plane Coordinate System NAD 83, Utah Central Zone, with a Grid bearing of 0° North, described as follows:

> Beginning at a point S01°17'29"E 573.46 feet and East 320.03 feet from the North Quarter Corner of Section 17, Township 15 South, Range 11 East, Salt Lake Base & Meridian, Carbon County, Utah; thence S69°13'55"E 976.05 feet; thence S59°06'04"E 1739.13 feet; thence S77°42'06"E 190.29 feet; thence N57°55'16"E 339.13 feet; thence S66°11'07"E 744.85 feet; thence S32°59'58"E 429.49 feet; thence S61°09'10"E 711.15 feet; S43°41'33"E 166.36 feet; thence S53°32'53"E 507.04 feet; thence S66°40'35"E 1236.75 feet; thence N85°48'18"W 246.77 feet; thence N73°59'49"W 1024.45 feet; thence N65 01'26"W 1342.14 feet; N63 56'16"W 791.16 feet thence N25°42'17"W 158.28 feet; thence S75°08'23"W 213.43 feet; thence N89°21'29"W 285.96 feet; thence S57°51'59"W 216.07 feet; thence N65°55'36"W 147.78 feet; thence N61°43'58"W 716.60 feet; thence N47°09'44"W 1368.09 feet; thence N34°04'21"W 353.57 feet; thence N57°21'56"W 170.81 feet; thence N29°27'41"W 125.31 feet to the point of beginning. The Basis of Bearing is N01°06'56"W between the South Quarter Corner and North Quarter Corner of Section 8, T15S, R11E, SLB&M as per the information on file at the Carbon County Surveyor's Office.
> Containing 64.07 Acres.

Industrial area West contains 1117.79 Acres minus the SMCRA Area West (64.07 Acres) = Net 1053.62 Acres Industrial Area West.

Operations in the Industrial Area

In November 2013, Price River Terminal, LLC (PRT), purchased the Wellington Preparation Plant property from NEICO. PRT has obtained DOGM approval to operate a small section of the property in the northwest corner of the permit area as a "Crude-by-Rail" transloading facility. Crude oil is delivered to the site by truck where it is transferred to railcars for shipment to various crude oil refineries throughout the United States. This is accomplished either through an automated transloading system or a manual transloading system depending on the customer. The bulk of the crude oil is processed through the automated system consisting of a truck unloading station, an 80,000 barrel storage tank and an automated railcar loading station that allows PRT to load up to nine railcars simultaneously. Trucks arriving at the PRT facility off load their crude oil through one of five LACT units at the truck unloading station into the storage tank. Crude oil from the tank is transferred by pipe to the railcar load out system where it is loaded into railcars for unit train delivery to its refinery destination. A portion of the crude oil arriving at PRT is transloaded directly from truck to railcar(refer also to Dwg. E9-3341 for transloading site location information).

Initial activities for the transloading operation included the re-grading of the existing access road(s) leading from Ridge Road to the transloading area, placement of a mobile office trailers, rehabilitation and expansion of the rail tracks, and the modification of outlet culverts in specific areas.

The outlet modifications entailed adding an oil skimming device that currently receives runoff from the transloading operations area. Any potential spillage from the transloading would normally be captured at the source by the containment and safety devices employed during the transfer process. The controls are described in detail in the Storm Water Pollution Prevention Plan (SWPPP) and the Spill Prevention Control and Countermeasure (SPCC) Plan for the site. In the unlikely event that an oil spill should occur and not be contained at the source, it would be captured by the oil skimmers. Refer to section 5.21 for more detail about the operations and safety measures.

Justifications for Change of the Postmining Land Use

There are several very good reasons to change the postmining land use for this portion of the permit area. An industrial postmining land use is a **higher and better use** of this area for several reasons, some of which are discussed below.

1. The area is ideally suited for the proposed activities at the site. It has long been the site of coal processing facilities.

2. It has a main line railway dissecting the property including a siding area used for industrial uses since 1957.

3. Jobs for Carbon County will be created as a result of the industrial site. Several meetings with local business owners and politicians have been conducted that have endorsed support of the new operations and postmining land use change. An example of one of the letters of support has been included in the chapter (Exhibit 4.12-A).

4. The entire area is zoned "heavy industrial" by Carbon County. The master plan of the county has designed this area to be developed in this manner. Therefore, the proposed new use of the site **will be consistent with applicable land use policies and plans**.

5. Historically, the immediate area has been used for industrial loadouts and processing facilities. This means the proposed use at this site will be **practical and reasonable.**

6. There is very little residential development in the immediate area.

7. Ridge Road, the main access road to the property, was specifically developed and funded as an industrial haul road to better serve local industry.

8. The **likelihood for achievement** of the proposed postmining land-use activities is 100%. It is currently being operated as a transloading facility.

9. Price River Terminal is committed to constructing and operating the facility to satisfy all federal, local and state laws regarding public safety, In addition, the site will have limited access to the public, so **it will not present actual or probable hazards to the general public health or safety** *and* **will not cause or contribute to violation of federal, local or Utah law.**

Onsite Reclamation Activities

The following reclamation activities have been completed at the Wellington site before and after approval of transloading operations.

1. Demolition and removal of all buildings including the offices, shops, heat dryer, track hopper, storehouse, coal carbonization lab, plant pumphouse, oil storage building and the main wash plant.

2. The following structures and support facilities have also been removed from the site: electrical substation, raw coal conveyors, and coarse refuse bin.

3. Major clean-up efforts of the entire area has been conducted including removing or burial of foundation concrete, removal of powerline poles, removal of existing scrap metal from storage areas (including the slurry pipeline) and all other waste products and debris from the general area.

4. Near-final site grading of the site has been accomplished in several areas.

5. Soil studies and surveys have been conducted to replace the approved borrow areas that were located in the proposed area for the change in postmining land-use.

6. Removal of the two (2) topsoil storage piles located near the access road to another topsoil storage location near the Coarse Refuse Pile within the existing permit area.

7. Reasonable locations to separate watershed boundaries between the industrial or land-use change area from other watersheds of the permit area. Hydrologic calculations have been made to show that the existing runoff control structures are designed adequately for specific precipitation events to account for the changes proposed.

8. Specific topographic site grading to specifications that allow runoff to report to the approved sediment ponds will be conducted.

9. Upon approval of the postmining land use change, the area will be removed from the Wellington Preparation Plant's Mining and Reclamation Plan (ACT/007/0012). The new permit area boundaries have been revised and are shown on Dwg. E9-3341. An application for a partial bond release will be submitted at that time.

Improvements of Structures and Roads Retained for the Proposed Postmining Land Use Change

Price River Terminal had made the following improvements to those structures and roads that will be retained for use of the new postmining land use.

1. Trackage - The current railroad tracks have been maintained and improved. Additionally, the current rail system has been expanded as approved by DOGM.

2. Access Road - The existing paved access road leading into the site has been maintained. In addition, existing unpaved roads have been upgraded to support the transloading trucking operations.

3. Track Hopper - The existing track hopper has been reclaimed and the tracks above it reenforced structurally.

4. Coal/Soil Material - The mixture of coal and soil material located at the old coal storage site has recently been graded to accommodate proper drainage and to present a more aesthetically pleasing appearance. Future plans for this area are to increase and diversify the industrial use of the site, making it a pad for other industrial activities.

   Consequently, for reclamation purposes, the coal/soil will be covered or removed to create a pad to accommodate the future proposed expansion site. If covered the material will come from Borrow Area C (see section 2.41 and Dwg. G9-3511).

5. Sediment Ponds - The Dryer, Auxiliary and Road Sediment Ponds will remain following reclamation including the concrete structure in the Auxiliary Pond. These ponds will remain to provide interim sediment control necessary for the industrial site – the proposed for the postmining land use. In conjunction with construction of the industrial area another sediment pond may be may eventually be created for runoff and sediment control of the site as the operations expand.

6. Safety - As safety precautions, the entrance gate will be locked when operations are not being conducted. Ownership, operations area and “No Trespassing” signs have been posted at the site.

Applicable Permits for New Postmining Land Use

Price River Terminal (PRT) has filed the necessary documents to transfer or obtain property ownership, reclamation bond and specific permits associated with the Wellington site.

All permits and approvals associated with the property have also been transferred. In some cases new permits were required, whereas in other cases the permits were transferred from the past owner (NEICO) to the current owner (PRT). These permits (or approvals) have included the following:

- Non-Federal General Permit C/007/0012; (Utah Division of Oil, Gas & Mining).
- Utah Pollutant Discharge Elimination System (UPDES) permit; (Utah Division of Water Quality).
- Conditional Use Permit (Carbon County, Utah).
- Spill Prevention, Control and Countermeasures (SPCC) plan (Utah Department of Environmental Quality).
- Construction Stormwater Permit; (Utah Department of Environmental Quality).
- Air Quality Permit; (Utah Division of Air Quality.
- Dam Safety Permit; (Utah Division Water Rights).
- Impoundment & Refuse Pile Approvals (U.S. Department of Labor, Mine Safety & Health Administration.

Support from the Public and Local Politicians

Exhibit 4.12-A is an example of one of the letters of support for the new operations and postmining land use change.

CARBON 18 COAL IS KING 94 COUNTY

"Strength Through Diversity"

John Jones
Commissioner
(435) 636-3271

Jae Potter
Commissioner
(435) 636-3273

Casey Hopes
Commissioner
(435) 636-3272

May 15, 2014

Mr. John Baza, Director
STATE OF UTAH
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

Mr. Daron Haddock, Environmental Manager
Utah Coal Regulatory Program
STATE OF UTAH
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

Dear Messrs. Baza and Haddock:

I am pleased to be able to write in support of Price River Terminal (PRT) and the energy services complex project in Carbon County, Utah. I am writing on behalf of the Carbon County Board of Commissioners and as a County Commissioner for the past nearly six years and previously as a city council member, I have been involved with and have felt a personal responsibility for the economic future of Carbon County and its citizens.

Since August 6, 2007, when a cave-in occurred in the Crandall Canyon Mine that ultimately killed nine people – six miners and three rescue workers, Carbon County has been in an economic decline. That tragedy caused the mine to close and 115 families to lose their employment. This was devastating to our tight-knit community, especially in light of the loss of life that occurred.

That closure and new restrictions on deep, retreat mining led to an industry-wide slump with a major reduction in the local mining workforce. More mine closures and layoffs followed and tougher federal standards are forcing another Carbon County institution to close within the year – PacifiCorp's Carbon Power Plant.

All of this has led to what could be a very bleak future for our local economy. That is why I so strongly support this endeavor.

Carbon County 120 East Main Street • Price, Utah 84501 • (435) 636-3200 • Fax (435) 636-3210

This postmining land use change from grazing and wildlife to industrial will provide greatly needed new industrial prospects for Carbon County. It is our belief that it will also bring other support businesses into the area that will contribute to greater diversity in our county.

Until the recent transloading operations began, the Wellington site had been inactive for many years. Now we are beginning to capture a glimpse of hope for a better future.

Also worth mentioning is that -- as part of the new PRT ownership and transloading operations, other areas at the Wellington site have been, and are currently being, cleaned up and reclaimed.

I have been working closely with the owners of PRT to make sure everything Carbon County can do to make this a success is done. During this process, I have gained a lot of respect for Global One Transport and admire their commitment to see that it is successful. I know that they look forward to many years of collaborative business endeavors which will greatly benefit Carbon County.

The Carbon County Board of Commissioners also looks forward to many years collaborating with PRT as we continue to work towards a growing and thriving community once again. One in which our young people can stay and raise a family while supporting a viable tax base.

Thank you for your time and consideration. Please do not hesitate to contact me if you would like to discuss this matter further.

Very truly yours,

John Jones
Carbon County Commissioner

JJ/sl

CHAPTER 7

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* For inclusion in Operation Plan, October 1990

** For inclusion in Reclamation Plan, January 1991

CHAPTER 7

R614R645-301-700

PERMIT APPLICATION REQUIREMENTS – HYDROLOGY

July 15, 1990

CHAPTER 7

HYDROLOGY

7.10 Introduction (~~R614~~R645-301-710)

Within the Hydrology chapter, EarthFax Engineering, Inc. has prepared and/or aided in preparation of several of the sections including 7.22, 7.24, and 7.28. Coal Systems, Inc. submitted a package to EarthFax that included run-off volume calculations and hydrological structure calculations. The information in included in the Hydrology Appendix (Volume II).

To reflect changes in the site hydrologic conditions as a result of the previously proposed Covol Wash Plant construction and operations, JBR Environmental Consultants ~~has~~ provided additional updated baseline information, runoff calculations, and assessments of probable hydrologic consequences. Changes have been made to Sections 7.13, 7.22, 7.23, 7.24, 7.28, 7.31, and 7.33, and supplements have been attached to Volume II – Hydrologic Appendix – Watershed 7.

7.13 INSPECTION (R614R645-301-700)

The owner/operator commits to proper inspection of the impounding structures within the permit boundary. Since the impoundments are subject to MSHA, 30 CFS 77.216, they will be inspected in accordance with 30 CFR 77.216-3. Current impounding structures in the Price River Terminal permit area are the Upper and Lower Refuse Basins and the Clearwater Basin. At this time there is no water being impounded in any of the structures.

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7.20 ENVIRONMENTAL DESCRIPTION (~~R614~~R645-301-720)

~~The Wellington Load-Out Facility is located near Wellington, Utah, lying west of the Price River. The Load-Out Facility is in place and no expansion of presently disturbed areas will take place during the present Operation Plan. The large disturbed areas include the haul road, the load out pad area, the railways, the refuse piles, ponds, and the refuse basins.~~

The Price River Terminal Wellington Preparation Plant facility is located near Wellington, Utah. The permit area for the facility includes regions both east and west of the Price River (see Map E9-3343). The region east of the Price River includes ponds and refuse basins. The region west of the Price River includes a coarse refuse pile, a former coal pile site, and soil borrow areas.

7.21 GENERAL REQUIREMENTS (R645-301-721)

The pre-mining environmental resources within the Price River Terminal ~~Coal Loadout~~ Facility area are as follows:

PREVIOUS COAL CLEANING PLANT AND LOADOUT AREA

The pre-disturbed environmental resource was limited to a sparse vegetation community. A ditch carried irrigation water to fields between the DRG&W Railroad and the Price River south and east of the ~~present~~ former plant site. The surface rises in elevation to the west to a sparse desert plant community.

Ground water is found in both the Mancos Shale formation and the slope wash and floodplain alluvial deposits that underlie the area of the former loadout facility with flow in the area generally toward the Price River. See section 7.22.1 and 7.28.2 for a detailed description of the ground water location and extent. Ground water quality is generally marginal and is described in more detail in sections 7.24.1 and 7.28.2

The Price River flows diagonally, northwest to southeast, through the permit area with flow varying greatly with season, precipitation, and snow melt. More detailed descriptions of river flow and surface water quality are given in sections 7.22.2, 7.24.2 and 7.28.2.

REFUSE BASIN SITES

In addition to the general ground water and Price River resources listed above, the pre-disturbance environmental resource was limited to an ephemeral stream that appears to have carried irrigation return water from the fields north of the basin locations to the Price River. The ground surface rises in elevation on both sides of the stream channel to a sparse desert plant community.

7.22 CROSS SECTIONS AND MAPS (~~R614~~R645-301-722)

Hydrological structure cross-sections are referenced throughout Appendix II, and cross-sections and maps are in Appendix III-A.

7.21.1 GROUND WATER LOCATION AND EXTENT

As indicated in Section 6.0, the geology of the load out facility area consists of the Blue Gate Shale member of the Mancos Shale formation overlain by slopewash and floodplain alluvial deposits. Ground water is found in each of these deposits. Ground water has been identified~~, within the load-out facility area~~, in 13 of the 14 monitoring wells on the site. Water level measurements from wells at the PRT facility have been submitted to the Utah Division of Oil, Gas, and Mining hydrology database (UDOGM, 2015). ~~Table 722.1 presents the water level readings collected in May 1990, 1999, and June 2012~~. Dwg. G9-3509 shows the location of the monitoring wells and the potentiometric surface map for the facility area. The drawing indicates that the ground water flow is from the hills to the north and south of the site toward the Price River. Water levels measured during June 2012 were generally similar to previous values.

Underlying the load-out facility, the ground water gradient is very gentle at 0.005 foot per foot. Under the abandoned tailings pond, the gradient is also quite gentle, ranging from 0.006 to 0.01 foot per foot. However, at the contact between the tailings and the river alluvium, the gradient steepens to 0.05 foot per foot. Monitoring well GW-5 (now abandoned), the dry well, is located in this region where the water table drops toward the river. Originally completed in the ground water seepage mound from the operational tailings ponds, the bottom of the well is presently located an estimated 7 feet above the ground water surface.

———Within the slope wash deposits underlying Blue Gate Shale, to the north of the tailings facilities, the ground water gradient is fairly uniform toward the river at 0.025 foot per foot. The source of the water from the natural formations is not known; however, given the agricultural activity which occurs in the area of Wellington, it is possible that much of the ground water flow is the result of irrigation.

———Lithologic logs and completion details for monitoring wells listed in Table 7.22-1 were not available prior to May 1990. To assist in determining the lithology of the well locations, a series of test bore holes were placed within 5-feet of several selected existing wells. The wells selected for twin boring were GW-3, GW-7, GW-8, GW-11, and GW-14. These borings filled in geologic information to use with prior bore holes drilled by U.S. Steel during the initial foundation investigations for the site. The lithologic logs from these new boring are attached in Tables 7.22-2 through 7.22-6.

———Additionally, to assist in determining the completion details of the wells, a downhole camera was used to check the screened interval in several wells. The screened intervals identified in this effort are presented in Table 7.22-1. As indicated by the data contained in Table 7.22-1, the completion zones for the various wells are not constant. Each well consists of 4-inch diameter PVC casing with PVC screened casing. The screen section consists of a machine slotted section of about 32 slots per foot. The slot size is approximately a 0.01-inch (20) slot.

———Based on the amount of sediment identified in the wells during the camera investigation, it is felt that the existing wells were completed without a gravel pack as a natural completion or that the wells had not been adequately developed. Since the aquifer test data, reported below, were comparable to the open bore hole tests conducted by Rollins, Brown, and Gunnel (RBG) (1978), it is felt that the wells are adequately developed and a natural completion is considered the reason for the sediment.

———Two evaluations have been conducted of the aquifer characteristics of the load out area. One by RBG (1978), as part of the slope stability evaluation of the tailings dikes, and one by EarthFax Engineering (1990), to determine the conditions at selected monitoring wells. Table 7.22-7 presents the aquifer characteristics reported by RBG. The field permeability tests were performed at 5-foot intervals in each test boring in accordance with USBR Method E-18.

———Table 7.22-8 presents the results of the EarthFax evaluation. The field tests consisted of conducting a bail and slug test in each well and recording water level response using a pressure transducer and data logger until the well had recovered to 80 percent of static level. The Bower and Rice method (1976) was used to evaluate the slug and bail test field data. Graphical plots of the time-drawdown data are presented in Figs. 7-1 through 7-9A.

7.22.2 LOCATION OF SURFACE WATER BODIES

The Price River Terminal permit area is contained in the Price River watershed. Dwg. F9-177 shows the relationship of the different structures to the Price River. The upper and Lower Refuse Basins and Clearwater Pond were Surface water sites during operation of the Coal Cleaning Plant, however; since the plant has not been in operation since 1984, these structures have been dry excluding small amounts of water due to run-off of surrounding watershed areas. ~~They will again impound water once the Covol Wash Plant becomes operational.~~

The Clearwater Basin was constructed with a lining of clay and clay loam to form an impervious liner. The upper two basins were not similarly lined. This refuse area is separated from the historic previously existing loadout area by the Price River. The flow in the river greatly varies with the seasons and precipitation and snow melt. The Price River flows at the Woodside Station # 09314500 south of the property are referenced in Table 7.22-9 through 7.22-13. Flow pattern of the surface drainages are shown on Drawing F9-1777.

7.22.3 Elevations and Locations of Monitoring Stations

The locations of the water monitoring sites are shown on Drawing E9-3451. Elevations of the ground water monitoring wells, along with the ground water surface is located on Drawing G9-3509.

7.22.4 Location and Depth of Water Wells

The locations of water wells are shown on Drawing E9-3451. Completion information for water wells, including total well depths, screened intervals, and depths to water are provided in Table 7.22-1.

7.22.5 Contour Maps of Permit Area

Dwg F9-177 shows the contours of the property including disturbed and undisturbed areas. The detailed topography associated with ~~the Covol Wash Plant site and~~ the Refuse Basin is shown on Drawings 712a and Tl-9596.

On January 21, 1998, slug tests were performed on ~~recently installed~~ monitor wells GW-15A, GW-15B, and GW-16. Wells GW-15A and GW-15B are located north of the Siaperas Ditch and well GW-16 is located on the dike between the Lower Refuse Pond and the Clearwater Pond. All three two-inch diameter wells are completed in the alluvial silts and sands that comprise the unconsolidated sediments in the area of the Price River.

Monitor well GW-15A is screened from 9.0 to 14.0 feet below grade; well GW-15B is screened from 21.0 to 26.0 feet below grade; and well GW-16 is screened from 59.0 to 69.0 feet below the top of the Lower Refuse Dike (see Drawing E9-3451). No slug test was performed in the recently installed well GW-17, located on and in the coal fines of the Lower Refuse Pond, because of a lack of standing water in the well.

Failing and rising head slug test were performed in each well. In the falling head tests, the rise in the water level was produced by dripping a solid section of stainless steel rod, attached to a rope, into the water in the well. The subsequent declining water level, in each well, was measured using an electronic recording data logger and pressure transducer. Rising head tests were performed after the falling head tests. The equilibrium water level in each well was depressed by removing the slug and recording the rising water level with the data logger and transducer.

The data derived from the slug tests performed in each well were analyzed using the Bouwer-Rice method with Aqtesolv modeling software to estimate hydraulic conductivity (K). The Bouwer-Rice method was published in 1976 and measures K of the aquifer around the screen zone of a well for fully or partially penetrating wells in unconfined aquifers (Bouwer, 1989). The Bouwer-Rice method accounts for the geometry of the screen, gravel pack, finite saturated thickness, and an effective radial distance over which the initial drawdown is dissipated.

The following table shows the average K for the three wells that were tested.

Well I.D.	**Average K (ft./min.)**	**Formation Tested**
GW-15A	0.00534	Alluvium
GW-15B	0.0112	Alluvium
GW-16	0.0867	Alluvium

Note: the data derived from the falling head test in well GW-16 were evaluated to be unreliable. Therefore, the K presented for well GW-16 was derived from data evaluated from the rising head test.

The range of hydraulic conductivities for the three wells tested indicates that the aquifer materials consist of silty sand to clean sand, which is consistent with the sediments observed during the drilling of the wells. In addition, the range of hydraulic conductivities is also consistent with the K values derived from the slug tests performed by EarthFax Engineering (see Table 7.22-8).

Table 7.22-1

Wellington Preparation Plant Well and Water Level Data

Well ID	Static Water Level 1990, 1998 (ft-btc*)	Static Water Level June 2012 (ft-btc*)	Total Depth (ft-bgl**)	Stick-up (ft)	Screened Interval (ft-btc)
GW-1	14.31	14.30	22.20	2.30	-
GW-2	24.62	25.43	31.50	1.45	12.0-31.5
GW-3	18.30	Dry	22.00	2.30	9.0-22.0
GW-4	9.07	8.30	31.90	2.28	-
GW-5*	-	-	22.50	-	-
GW-6	8.68	6.81	34.00	2.30	17.0-34.0
GW-7	10.48	11.08	37.85	2.80	-
GW-8	26.83	27.69	58.35	1.92	43.0-58.0
GW-9	15.14	14.88	36.10	6.05	-
GW-10	13.55	12.67	46.46	1.66	-
GW-12	9.17	8.03	42.20	2.32	-
GW-13	24.20	25.52	26.30	1.80	-
GW-14	13.68	10.48	45.12	2.15	26.0-45.0
GW-15A	6.42	11.34	14.20	3.0	9.2-14.2
GW-15B	5.74	10.62	26.10	3.0	21.1-26.1
GW-16	41.59	45.52	69.25	3.0	59.25-69.25
GW-17	20.90	23.47	24.30	3.0	14.30-24.30

*ft – below top of casing

** ft – below ground level

<u>New Surface Water Sampling Location</u>

SW-2a monitors water quality only (use SW-2 for flowrate)

7.23 Sampling and Analysis (R645-301-723)

The owner/operator will verify that the analysis of the samples is being done in accordance with the methodology in "Standard Methods for the Examination of Water and Wastewater" or 40 CFR parts 136 and 4344.

~~The owner/operator of the facility will carry out the hydrological sampling protocol listed in the permit under Sections 7.24.1 and 7.24.2 and in accordance with the appropriate regulations. Dry well GW-5 will be officially eliminated from the monitoring program as of the fourth quarter of 1997; it has been abandoned, sealed and reclaimed by Covol.~~

~~All of the ground and surface water sites are sampled on a quarterly basis using the parameters shown on Table 7.24-2 and 7.24-5.~~

7.24 BASELINE INFORMATION

7.24.1 GROUNDWATER INFORMATION

WATER RIGHTS

A search of all the ground water rights located within a three mile radius of the permit boundary was conducted. These ground water rights are summarized in Table 7.24-1 with Dwg. G9-3507 showing the location of each water right.

WATER QUALITY

Ground water quality data have been collected in the vicinity of the Price River Terminal ~~area of the load-out facility~~ since 1985. This data collection activity has been conducted by several different owners and sampling firms. Since no information is available about the methods used to sample the ground water, an anion/cation balance test was applied to all of the ground water samples. Milliequivalent values of the anions and cations in each sample were summed and the percent difference calculated. If the percent difference between the cation sum and the anion sum exceeded 10 percent, the data for that sample were assumed to be in error. The ground water sampling protocol, which has been used since December, 1989, consists of collecting the water samples in accordance with the procedures stated in the Guidelines for Establishment of Surface and Ground Water Monitoring Programs for Coal Mining and Reclamation Operations, the Division, 1986. A copy of the Water Quality Parameters can be referenced in Table 7.24-2.

The groundwater quality data, collected from 1985 through 2014 ~~mid-1991~~ have been entered into the Divisions electronic water quality database. To update information as part of the Covol Wash Plant amendment, data collected at sites east of the Price River (GW-1, GW-2, GW-3, GW-4, and GW-6) from mid-1991 through May 1997 ~~has been~~ were submitted to the Division's electronic water quality database. (No water quality data has been reported at GW-5 in recent years, as the well has evidently been dry.) Further, samples from these five wells were sampled by Covol in August, 1997 for all baseline parameters, and these data have been entered into the Division's electronic water quality database.

Comparison of ground water quality data with the Utah ground water quality standards indicate pH values outside the acceptable range for two wells, GW-1 and GW-7. For the GW-1 sample of 12/87, the pH value was 6.33. The GW-7 sample of 8/86 had a pH value of 9.65. The updated data set also showed at least one pH value outside the acceptable range on three different dates and at four out of the five wells. The inconsistent nature of these exceedances suggests sampling and/or analytical error rather than natural occurrences. All other samples meet the ground water standards.

An evaluation of the major cations and anions was conducted to classify the ground water. The ground water in the Price River Terminal ~~load-out~~ area classifies as a strong sodium-sulfate type water. This type of water classification is expected due to the high concentrations of soluble salts, including gypsum ($CaSO_4 \cdot 2H_2O$), and mirabilite ($Na_2SO_4 \cdot 10H_2O$), and thenardite ($NaSO_4$), present in the Mancos Shale (Waddell, et Al., 1981). To assist in understanding the seasonal variations of ground water quality, data ~~graphs~~ for selected parameters was analyzed ~~were developed~~ for each well using the pre-1991 data. ~~These graphs are presented as Figures 7.24-1~~

~~through 7.24-6. The graphs present the concentrations of Iron, Manganese, pH, TDS, TSS, and Water Level for each of the ground and surface water sampling sites for the original data set through mid-1991.~~ The discussions below relate to that data set. The pH data ~~graphs~~ indicate little seasonal variation. Although the data ~~graphs~~ for ground water TDS do not show seasonal variation, some show an increase in TDS with time. Wells GW-3, GW-8, GW-9 and GW-11 show the greatest variation with time.

There also appears to be an abnormal variation in TDS values with reference to both time and location. GW-2 and GW-3 had similar TDS concentrations during 1985 and 1986. However, in 1987 GW-3 experienced a dramatic ten-fold rise in TDS values while the TDS values for GW-2 have remained relatively low over time. Both GW-2 and GW-3 are located in the Upper Refuse Basin and within 1,500 feet of each other. The reason for this abrupt change in the TDS levels of GW-3 is not apparent.

TDS values determined for the samples taken from GW-6 were all within the 2,500 to 6,800 ppm range except for a TDS value for the 11/85 sample which was 32.6 ppm. This is another order-of-magnitude difference for which there is no apparent explanation. It is probable that the methods of sampling changed or that a recording error was made, however without detailed field or lab notes the exact cause is unlikely to be determined.

TDS values obtained from samples taken from GW-13 ~~are~~ were also unusually high compared to the value obtained from other samples. The location of GW-13 does not suggest that these values should be higher and may indicate that these data may be questionable.

The data ~~graphs~~ for total iron and total manganese indicate considerable variability. One of the companies which has been sampling the wells suggests that the reason for the variability may be due to the use of the total analyses that are conducted. With the high concentration of TDS recorded in many of the samples, the iron and manganese in the sediment as well as the dissolved constituent is reported. There is little evidence to support this conclusion because TSS levels were not analyzed, not recorded, or were too low to register, for many of the high iron and/or manganese samples. The manganese concentration reported for samples from Well GW-10 range from 0.01 to 0.08 ppm except for one sample taken 10/88 which shows a concentration of 1.38 ppm. This is an approximate 25 times increase for the one sample. After 10/88 the measured concentrations of manganese returned to the normal levels of 0.01 to 0.05 ppm. It would appear that the 10/88 sample was anomalous. Well GW-9 also exhibits the same type of extreme variability.

Monitoring wells GW-10 and GW-11 are very close together yet they exhibit an unusually large variation in sample results. The 9/90 sample for GW-10 showed a manganese level of 0.04 ppm while the 9/90 sample for GW-11 showed a value of 0.69 ppm or 17 times higher than for the GW-10 sample. GW-10 and GW-11 are just over 250 feet apart. There are other examples of wide ranges of manganese sample analyses over time and location.

The same kinds of anomalies can be found in the sample data for iron analyses. For example, typical iron concentrations for GW-14 samples range from 0.01 to 6.57 ppm. However, the sample for 5/87 indicated a value of 140 ppm, an increase of 40 times over the typical values. GW-1 shows typical values of 0.01 to 9.18 ppm iron, however the 3/88 sample indicates and iron concentration of over 96 ppm, a 20 times increase over typical values. Sampling data as recent as 3/91 also shows an iron value of 28 ppm which is 5 times the typical values.

The data presented herein contain other anomalous results with no apparent reason for their variation. Throughout the ground water analysis it has been puzzling to find such extreme variation in ground water conditions. As a whole, such variation is not typical and not reasonable for the local ground water characteristics. The reason for the anomalies discussed above is unknown and at present can only be explained by sampling, reporting or analytical error. This is especially true since the loadout facility was idle between the year 1984 and 1989.

Given the data problems described above, ~~the more recent~~ another data set that was analyzed as part of the Covol amendment was tabulated and analyzed separately. However, it is still difficult to make definitive statements regarding trends or variations in the data. In general, ~~the more recent~~ these data showed values that were within the range of the previous data. Since 1991, the TDS concentrations at GW-1 and GW-3 appear to have increased over time, while TDS at GW-2, GW-4 and GW-6 have apparently at least minimally decreased during the same time period, most notably at GW-2. GW-2 and GW-3 still report widely disparate TDS values even though they are located quite close to each other.

7.24.2. SURFACE WATER INFORMATION

WATER RIGHTS

A search of all the surface water rights located within a three mile radius of the permit boundary was conducted. These water rights are summarized in Table 7.24-4, with an accompanying map which shows the location of each water right.

WATER QUALITY

Surface water quality data have been collected in the vicinity of the Price River Terminal ~~area of the load-out facility~~ since 1985. This data collection activity has been conducted by several different owners and sampling firms. Since no information is available about the methods used to sample the surface water a anion/cation balance test was applied to all of the surface water samples. Milliequivalent values of the anions and cations in each sample were summed and the percent difference calculated. If the percent difference between the cation sum and the anion sum exceeded 10 percent the data for that sample were assumed to be in error. The surface water sampling protocol, used since December, 1989, consists of collecting the water samples in accordance with the procedures stated in the Guidelines for Establishment of Surface and Ground Water Monitoring Programs for Coal Mining and Reclamation Operations, the Division, 1986. A copy of the Water Quality Parameters can be referenced in Table 7.24-5.

The surface water quality data, collected from 1985 through mid-1991, have been entered into the Division's electronic water quality database and plotted on Figures 7.24-1 through 7.24-6. Data for surface water sites SW-1, SW-2 and SW-4 from mid-1991 to 2014 ~~mid-1997~~ have been entered into the Division's electronic water quality database. Data from this latter period for SW-3, SW-5, SW-6 and SW-7 are not included because no flow was recorded at those sights in recent years. Basic statistical evaluations, consisting of maximum, minimum, mean, standard deviation, and number of analyses, of each parameter was conducted for the data assumed to be good.

A comparison of these sample results can be made against the Utah State Water Quality Standards for the Price River near Wellington which has been classified as a Class 3 and 4 water. Class 3 or 4 limitations on water quality include a 1.0 mg/L limit on iron, and a 6.5 to 9.0 limit on pH. Since Class 3 waters do not have limits for TDS and sulfate, the appropriate drinking water standard of 2,000 and 1,000 mg/L were used respectively.

According to the limitations listed above, the pH standard was exceeded at points SW-1, SW-2, SW-4, and SW-7. For sample points SW-1 and SW-2 (the up- and down-stream points on the Price River), two different samples exceeded the standard on the same days. During the month of November of 1987 pH values of 6.20 and 6.17 were recorded for SW-1 and SW-2, respectively, On 3/90, the pH values for the same stations were 9.35 and 9.40, respectively, and on 5/14/97, the pH values for those stations were both 9.8. Sample point SW-4 reports one value exceeding the standard on 4/88. The data on that date indicated a pH value of 2.22; however, all other samples are within the acceptable range. Based on field investigation, no evidence of acid drainage could be found in the Siaperas ditch and it is felt that this pH value is in error, and may be due to recording, sampling or lab clerical error. Sample point SW-7 also indicates one sample value exceeding the standard (the pH value was 9.5 for the 11/87 sample). The inconsistent nature of these exceedances suggests sampling and/or laboratory error rather than natural occurrences.

The sulfate and TDS limits of 1,000 and 2,000 milligrams per liter, respectively, were exceeded at all sample points except SW-3 in the earlier data set, and have also been exceeded numerous times since then at sites examined for the Covol amendment (SW-1, SW-2 and SW-4). SW-3 has not recorded any flow since being installed in 3/86. Exceeding the standard for these parameters is not uncommon for the surface run-off within the central Price River basin, where TDS concentrations range from 2,000 to 4,000 milligrams per liter (Mundorf, 1972). As with other water quality data however, it should be noted that extreme variations in values is not typical and raise suspect to the validity of the data.

As evaluation of the major cations and anions was conducted to classify the surface water. Based on the data from March, 1990, the surface water in the load-out area classifies as a sodium-sulfate type water. This is to be expected due to the high concentrations of soluble salts, including gypsum ($CaSO_4 \cdot 2H_2O$), mirabilite ($Na_2SO_4 \cdot 10H_2O$) And thernardite ($NaSO_4$), present in the Mancos Shale (Waddell, et. Al., 1981).

~~To assist in understanding the seasonal variations of surface water quality, graphs for selected parameters were developed for each sampling point. These graphs are presented as Figures 7.24-1 through 7.24-6. The graphs present~~ the concentrations of Total Iron, Total Manganese, pH, TDS and TSS, and flow for each surface station have been submitted to the Division's electronic database. The pH ~~plots~~ values indicate little seasonal variation. Data~~Plots~~ for TDS and TSS show a seasonal fluctuation, with TDS decreasing in the spring and increasing in the fall. TSS concentrations peak in the spring of each year. This is especially shown at sampling points SW-1 and SW-2. The ~~plots~~ data for Total Iron and Total Manganese indicate considerable variability. It was previously suggested that this is due to the use of the "total" water quality analyses. With the high concentrations of TSS recorded in many of these samples, the iron and manganese in the sediment as well as the dissolved constituent is reported. As indicated for ground water, the iron and manganese levels do not seem to correlate well to TSS levels. For example, the 5/85 sample for SW-1 shows a TSS of 2,460 ppm and an iron level of 3.42 ppm. The 7/85 sample for SW-1 shows a TDS of 2,039 ppm and an iron level of 53.8 ppm. The sample taken only two months later than the first shows a 17% decrease in TSS and a 1,473% increase in iron. The reason for the variability in the sample data is unknown.

Water quality data reviewed and analyzed shows that there are some periods of time for many of the stations wherein large variations in water quality are noted. These large variations typically raise concern regarding the validity of the data as an indicator ~~or~~ of true water quality and operation impacts. By accepting the data "as is" with the removal of obvious data errors, the operator and the Division are forced to evaluate field conditions and potential impacts based on a range of values. A higher level of sampling control would decrease the range of fluctuations, increase the level of confidence in the data, and generally fine tune the conclusions regarding the degree of potential impact. An increase in sampling accuracy would generally not change overall impact conclusions.

In order to improve the nature of the water quality data it is proposed that the sampling and analysis process be refined. Refinement will include training to the designated sampler and a review of the water quality laboratory completing the analyses. Through this process, the older more questionable data will be replaced by recent and future, more uniform, and accurate sampling data.

7.24.3 GEOLOGIC INFORMATION.

Geologic information is present in Section 600. This information was used to develop the probable hydrologic consequences.

7.24.4 CLIMATOLOGICAL INFORMATION.

Average annual temperature for this area is 49.4 °F with a range of -21° to 107 °F. The average temperature during the warm months is 63.9 °F and during the cold months is 34.9 °F. Average annual precipitation is 9.59 inches. Seasonal precipitation ranges at the facility are summarized below (1980-2005 data from the Wellington 3E weather station 429368 located 0.7 miles north of the facility).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Precip. (in.)	0.62	0.57	0.76	0.74	0.76	0.51	0.78	1.09	1.29	1.02	0.49	0.49
Snowfall (in.)	6.4	4.2	1.8	0.5	0	0	0	0	0	0.3	2.6	4.7

The prevailing winds at the nearby Price weather station are from the north (18% of the time), northwest (13% of the time), northeast (11% of the time) and from the south (8% of the time), with wind speeds typically ranging from 0 to 19 mph, rarely exceeding 26 mph (see station data 1999-2012).

7.24.5 SUPPLEMENTAL INFORMATION.

7.24.6 SURVEY OF RENEWABLE RESOURCE LANDS.

Information obtained from the ground water monitoring wells within the permit area suggests that there is an aquifer perched at the interface of the surface alluvium with the underlying Blue Gate Shale. The shape of the piezometric surface as shown on Map E9-3451 indicates that the primary source of recharge is north of the permit area.

Mining of native, in-situ material did not occur within the permit boundary so there is no subsidence. The mining that occurred under Covol's operations simply involved removing waste coal refuse placed by previous operators, so there was no potential for subsidence as a result of that operation. There are no excavations at the operation which penetrate to the aquifer, except for the monitoring wells. It was concluded that because of these limitations the operation within the permit area would not disrupt the aquifer except as described in Section 7.28. The primary recharge area for the aquifer is off the permit area to the north.

7.24.7 MEET REQUIREMENTS OF 302-320

Information regarding Alluvial Valley Floors as presented within Section 2.0 and other sections of this MRP has been summarized herein.

The Price River Terminal ~~Wellington Coal Loadout Facility~~ appears to be located on alluvial deposits and there is evidence of historic flood irrigation to fields between the DRG&W Railroad and the Price River. Subirrigation in this area is however not highly beneficial because of poor ground water quality.

Section 2.20- entitled "Environmental Description" indicates that the general map unit of soils encompassing the Price River Terminal Wellington Plant Site is the Ravola-Billings-Hunting unit. The soils distribution is shown on Figure G9-3510. This map unit is described as: are salt and alkali affected in some areas.

Information contained in Section 2.21 entitled "Prime Farmland Investigation" indicates the ground water has a high salinity with little irrigation potential. A letter from Francis T. Holt, State Conservationist on June14, 1983 states:

> "After site investigation, the Soil Conservation Service has determined that no prime farmland occurs in the U.S. Steel Mining Company, Inc., Wellington Coal Cleaning Plant. The area is too saline and without irrigation water the moisture requirement for prime farm land cannot be met."

Ground water quality data from 1985 through the present, have been submitted to the Divisions on-line hydrology database compiled and summarized in Table 7.24.3. An evaluation of the major cations and anions reveal that the water in the load-out area classified as a strong sodium-sulfate type water.

Section 3.11 states that there are basically three major habitats within the permit area: riparian, desert scrub and agriculture. The agricultural habitat is represented as pasture land in the vicinity of the plant (figure E9-3443).

Section 6.24 provides some limited information related to local geology. Within this section it indicates that the area geology consists of alluvial flood plain deposits within the confines of the Price River Valley. These alluvial deposits are in turn underlain by low permeable Blue Gate Shales, thereby resulting in a geologic configuration in which the alluvium becomes an aquifer of limited usage.

TABLE 7.24.2

GROUND WATER QUALITY PARAMETER LIST

PARAMETERS	BASELINE	OPERATIONAL*
FIELD PARAMETERS		
Flow or Water Level (gpm/ft)		
Specific Conductivity (µS/cm)		
Temperature (°C)		
pH		
LABORATORY PARAMETERS		
Ammonia (NH_3)		
Alkalinity (Carbonate)		
Alkalinity (Bicarbonate)		
Alkalinity (Total)		
Aluminum Dissolved		
Arsenic Dissolved		
Boron Total		
Boron Dissolved		
Cadmium Dissolved		
Calcium		
Chloride		
Copper Dissolved		
Total Hardness		
Iron Dissolved		
Iron Total		
Lead Dissolved		
Magnesium		
Manganese Dissolved		
Manganese Total		
Molybdenum Dissolved		
Nitrate		
Nitrite		
Oil & Grease		
Phosphate (Orth.)		
Potassium		
Selenium Total		
Selenium Dissolved		
Sodium		
Sulfate		
Zinc Dissolved		
Total Dissolved Solids (T.D.S.)		
Cation/Anion Balance		

TABLE 7.24.5
SURFACE WATER QUALITY PARAMETER LIST

PARAMETERS	BASELINE	OPERATIONAL*
FIELD PARAMETERS		
Flow or Water Level (gpm/ft)		
Specific Conductivity (µS/cm)		
Temperature (°C)		
pH		
LABORATORY PARAMETERS		
Ammonia (NH_3)		
Alkalinity (Carbonate)		
Alkalinity (Bicarbonate)		
Alkalinity (Total)		
Aluminum Dissolved		
Arsenic Dissolved		
Boron Total		
Boron Dissolved		
Cadmium Total		
Calcium		
Chloride		
Copper Total		
Total Hardness		
Iron Dissolved		
Iron Total		
Lead Total		
Magnesium		
Manganese Dissolved		
Manganese Total		
Molybdenum Total		
Nitrate		
Nitrite		
Oil & Grease		
Phosphate (Orth.)		
Potassium		
Selenium Total		
Selenium Dissolved		
Sodium		
Sulfate		
Zinc Dissolved		
Total Dissolved Solids (T.D.S.)		
Total Settleable Solids		
Total Suspended Solids		
Cation/Anion Balance		

*OPERATIONAL AND POST MINING

7.25 BASELINE CUMULATIVE IMPACT AREA INFORMATION

~~———~~Hydrologic and geologic information for the cumulative impact area is located in Chapter 6 Geology, and in Chapter 7 Hydrology

7.26 MODELING

———Some modeling, interpolation and statistical techniques are used in evaluating the hydrology data; however, the actual monitoring data has been submitted electronically to the Utah Division of Oil, Gas and Mining ~~coal~~ Utah coal mining water quality database.~~is located in Tables 7.24-2 through 7.24-24.~~

7.27 Alternative Water Source Information (R645-301-727)

The owner/operator owns approximately 10 cubic feet per second of water rights in the Price River for industrial and irrigation uses at the Price River Terminal ~~Wellington Facility~~. ~~While the cleaning plant is not in operation the water usage for the facility is limited to small quantities. Previously, in conjunction with the Covol Wash Plant operations, the owner/operator committed in a lease agreement to provide Covol with up to 5 cubic feet per second of water from those water rights for operations at the Covol Wash Plant. As discussed further in Section 7.28 of this Chapter, Covol under its maximum water needs in Phase 1, expected to use about 4.6 cfs of water pumped from the Price River collection well and/or the river diversion to the river pumphouse. During the bulk of operations in Phase II, water usage was planned to be much less than during Phase I, averaging around 2 cfs on an annual basis, with pumping rates closer to about 3 cfs during summer months. The balance of the water rights were available for other activities if necessary at the plant.~~

The ownership and use of water under these water rights is covered by the State of Utah water laws and administered by the Division of Water Rights, State Engineers Office. The use of the Price River water is monitored year-round by a water commissioner employed by the Price River Water Users and appointed by the State Engineer. In the event that the owner/operator's actions result in diminution or interruption to the water rights of a legitimate water user, the owner/operator will make available water from the owner/operator owned or controlled water rights during the diminution or interruptions.

The quality of the Price River water is administered by the Utah Department of Environmental Quality. In the event that the quality of water becomes unsuitable for use by a legitimate water user due to actions by the owner/operator, the owner/operator will make available water from owned water right during the period of unsuitable water quality.

Reference Table 7.24-1 and 7.24-16 for a list of water rights for the property and surrounding area.

7.28 PROBABLE HYDROLOGIC CONSEQUENCES (PHC) DETERMINATOIN

This section of the permit application provides a determination of probable hydrologic consequences (PHC) upon the local environment resulting from activities at the Price River Terminal facility. ~~based upon mining related activities at the Wellington Coal Loadout Facility (WCLF).~~ The information provided herein has been compiled from previous efforts related to the facility by owners, operators and consultants which have historically assembled and analyzed the data. The majority of the data has been taken directly from the latest version of the mine permit application on file at the Division of Oil, Gas & Mining (DOGM). Where applicable, this information has been inserted directly into this updated PHC. Recent and historic water-quality information has been submitted to the Utah Division of Oil, Gas and Mining on-line coal water quality database (DOGM, 2015).

Attempts have been made to present the following information in a format consistent with the desires and intent of DOGM personnel based upon meetings held at the Division on October 1st 1991 while still following the basic outline of the regulations. As the reader reviews the material contained within this section it must be remembered that portions of the PHC tie directly to information contained within Sections 7.23 and 7.24 which discuss the water quality and monitoring programs established from the facility. ~~Water quality data tables and figures shown in Section 7.24 were developed in conjunction with the PHC and should be referenced as this section is reviewed.~~

7.28.1 DETERMINATION OF CONSEQUENCES

A determination of the PHC for the permit and adjacent area is included within Section 7.28.2 and 7.28.3. The discussion in Section 7.28.2 centers around the database used and baseline information collected for the analysis. Section 7.28.3 discusses existing or potential impacts to the environment based upon existing or proposed activities at the Price River Terminal facility. ~~to be conducted at the WCLF~~. ~~Included within Section 7.28.4 is a discussion related to the adequacy of the existing monitoring plan and recommendations for its improvement.~~

As part of the determination of consequences a time history of operations and local conditions was made based upon data provided by operations personnel at the former coal preparation facility ~~WCLF~~. A review of historic events is critical to understanding relationships between operations and fluctuation in environmental conditions. Historical items which may be of significance as the remainder of this section is reviewed are found in Table 7.28.1. Information contained within this table was used as data input during the data analysis phase of the project.

Time Period	**Condition Identified**
1983-1986	Higher than normal precipitation was recorded within this period of time. Site personnel indicate floods were recorded in 1986.
1984	Loadout idled
1986	Sewage treatment plant constructed near the northwest corner of the property.
1987-1990	Record droughts recorded.

7.28.2 BASELINE INFORMATION

The Price River Terminal ~~Wellington Coal Loadout~~ facility is located approximately one to two miles east-southeast of Wellington, Utah adjacent to the Price River. The permit area is located in parts of Sections ~~8~~9 through 10 and 15 through 17 of Township 5 South, Range 11 East (as indicated on Drawing G9-3507). The site has previously been operated as a coal preparation and wash facility by both U.S. Steel Corporation and Kaiser Coal Corporation. Originally constructed in 1958, the preparation plant was operated more or less continuously until approximately 1984. Castle Valley Resources acquired the property on August 2, 1989.

Present site facilities consist of ~~a wash plant, loadout,~~ a coarse refuse pile, a temporary pond coarse slurry pile and fine refuse basins, as indicated on Drawing E9-3341.

GEOLOGY

Surficial geology in the facility area has been presented on map C9-1213R. All of the valley bottom areas occupied by the ~~loadou~~t facility and the fine refuse pile is mapped as alluvium associated with various depositional environments (i.e., river alluvium, or slope wash). The hills that rise adjacent to the Price River have been mapped as Blue Gate Shale, a member of the Mancos Shale. Beneath the Blue Gate Shale is another member of the Mancos Shale, the Ferron Sandstone.

Ferron Sandstone. The Ferron Sandstone is a regionally extensive member of the Mancos Shale. In the area of the Price River Terminal ~~loadout~~, the Ferron Sandstone appears to be located at a depth of approximately 400 to 450 feet below the surface. Based on the water rights data, few wells, if any, are completed in the formation in the area adjacent to the loadout.

Blue Gate Shale. The Blue Gate Shale has been observed at all locations drilled through the alluvium in the area of the Price River Terminal facility ~~loadout~~. In addition, the Blue Gate shale is exposed in all the hills that rise above the ~~loadout and~~ fine refuse basins. Therefore, it is concluded that the Blue Gate Shale is continuous beneath the alluvial deposits and over the Ferron Sandstone in the ~~loadout~~ area. As is typical of the marine shales of the Mancos Shale, the Blue Gate Shale, in the area of the Price River Terminal ~~Wellington loadout~~, is gypsiferous. The presence of salts in the area is indicated by salt deposits found at or just below the crest of hills or high points in the Blue Gates Shale or shale-derived soils. These salts are soluble by rainfall and can be conveyed to either surface water or the ground water system.

Alluvium. Alluvium overlies the Blue Gate Shale over much of the Price River Terminal ~~loadout~~ area. Drawing E9-3428 in Section 6.0, presents cross-sections of the alluvial deposits in the area ~~of the loadout~~, and Drawing 621a has been modified to reflect alluvial isopachs based on test holes drilled in the refuse pond dikes. The deposits range in thickness from a few feet at the contact with the shale hills to approximately 35 feet deep in the valley of the Price River. The alluvial deposits consist of clayey or silty fine sands with some fine gravels at the surface. Toward the center of the valley, the alluvial deposits grade toward a silty, sandy gravel. This silty gravel layer ranges from 7 to 8 feet thick in the areas of CN-1, CN-2, and thickens to between 11 and 15 feet in the area of GW-7, GW-8, GW-11, and GW-14.

As discussed in Section 6.0, the Price River Terminal ~~loadout~~ is on part of the flood plain of the Price River and is underlain by a combination of alluvium and slopewash materials. These alluvial materials are also underlain by the Blue Gate Shale, a marine member of the Mancos Shale. Underlying the Blue Gate Shale is the Ferron Sandstone, also a member of the Mancos Shale.

Modifications made to Map 612a include (to the extent possible) alluvium thickness beneath the Upper and Lower Refuse Basins. Data used in the development of these isopachs include data contained in the Volume II – Hydrology Appendix “As Built Specifications, Designs, Approval Letters and Other Information for Coal Refuse Piles and Impoundments” provided in the permit application, test data for well Holes 1 through 6 located in the dike between the upper and lower basins and test Holes 7 through 18 located in the dikes surrounding the Clearwater Pond (all of which is provided in Appendix C), drill hole data for test Holes 1 through 5 located in the north dike (provided in Appendix E), and from tabulated well data provided in Section 7.22 of the permit. Observations regarding available data follow:

- Conclusive data required to determine precise alluvium depths is not available from north dike Holes 1 through 5 since the wells were not drilled into the Mancos Shale. North dike Hole 5 included in Appendix E shows a total drilled depth of 27.5 feet. Assuming alluvium at the north dike Hole 5 to start with the “brown sandy clay with gypsum” layer located at a depth of 14 feet (embankment material being located above that elevation), the minimum alluvial depth detected is 14.5 feet. Following similar analyses on Holes 1 through 4 show minimum alluvial depths of 14.5, 13.5, 10.0, and 11.0 feet, respectively.
- Test Hole 1 presented in Appendix E is in the same general location as Monitoring Well GW-2. These two holes have somewhat conflicting information. Appendix E Hole 1 shows no sign of shale to depths of 27.5 feet while slug test data for GW-2 shown in Table 7.22-8 indicate that a shale formation was tested, not alluvium. It is possible that the “shale” formation was assumed to have been tested because of permeability values calculated for the well. The upper 13 feet of Hole 1 generally shows a mixture of silts, clays, silty clay, gypsum and clay layers. Brown sandy silt appears at a depth of 13 feet and continues with gray clay lenses to a depth of 25 feet with brown silty sandy clay continuing the remaining 2.5 feet to the bottom of the hole.

  Two general possibilities seem to exist for well GW-2. The first is that the well is completed in a shale zone and the second in a tight clay alluvial zone. Under either condition, it is unlikely that the well is reporting accurate and/or timely ground water conditions. If in shale, it is not reporting alluvial flow quality. If in clay, the response time is so slow that the well would not represent accurate timely alluvial quality for those higher permeability zones found more toward the center of the refuse piles.

- Relatively good alluvial thickness data is available for test Holes 2 through 6 located along the center dike (Upper Dike). Data provided in Appendix C shows thicknesses of between 10 and 29 feet.

Test Holes 7, 12, 13 and 18 located at the four corners of the Clearwater Pond show 23, 5, 17 and 5 feet of alluvium respectively. Data from Holes 7 and 13 however has mostly been ignored since 1) data observed within the wells do not match other data available for the area and 2) the wells are located near the southernmost edge of the dike and are generally outside the main area of interest.

- Little value can be placed in the remaining test holes surrounding the Clearwater Pond including Holes 8, 9, 10, 11, 14, 15, 16, and 17 since they were not drilled deep enough to fully penetrate the alluvium. All that can be deciphered is that the thickness of alluvium at these holes is recorded to be greater than between 8 and 19 feet.
- Data provided in the June 25, 1993 Hydrology Appendix – Volume II showing the "As Built" information and data provides a rough cross section of the "Outer Dam". Plate 5 referenced within the text could not be found to identify clearly the locations of test holes D, G, H, & J referenced on the cross section. Assumptions had to be made regarding the orientation and location of the cross section. The first assumption made was that the cross section referred to the Clearwater Pond embankment since it was felt that it most represented an "Outer Dam". Secondly, it was assumed that south is to the left of the figure since the steeper topography shown on the cross section is more characteristic of conditions found to the south in the field and that the flatter conditions found on the right side of the cross section match more closely those found to the north. Alluvial thickness for each test hole and intermediate locations were then transferred to Map 612a and plotted.

Map 612a has been modified to show to the best degree possible the depth of alluvium beneath the Upper and Lower refuse basins and the Clearwater Pond. Note that little data is still available for the northeast portions of the Upper Refuse basin.

HYDROLOGY

As an aid to understanding the hydrologic characteristics and potential impacts of operations at the Price River Terminal ~~the Wellington Loadout Facility and the Covol Wash Plant~~, all surface and ground water monitoring stations have been grouped into sub-regions. These sub-regions and a description of their general purpose is outlined in Table 7.28-2. The locations of each of these monitoring stations are shown on Map E9-3451. In review of the water quality monitoring data available for the facility mention must be made as to the reliability of the data. Concerns raised by DOGM personnel during the early 1990's as to the soundness of the data has been acknowledged and efforts have been made to review and filter out potentially unreliable water quality data. As part of this effort a screening process has been undertaken to remove all data with anion/cation balances in error by more than 10 percent. Water quality statistics for the data with balances within the 10 percent margin of error as well as a listing of data which failed the test are provided in Section 7.24.

Some confusion as to the overall layout of ground water monitoring wells GW-1, GW-2, and GW-3 has been raised historically and warrants clarification herein. Station GW-1 is considered an upgradient well and is believed to be typical of "undisturbed" ground water conditions in the area north of the Upper Refuse basin. Although it is true that based on water level information that Well GW-3 has the highest head of all wells located within the permit area, it is not true that it is "upstream" of wells GW-1 and GW-2.

A review of the pond embankment and channel cross section at station GW-3 shows that the Siaperas Ditch may receive water from the immediate area surrounding both the north and south sides of the ditch during high water table conditions. This flow, if and when it occurs, is created by the ditch acting as a drain to the localized water table. Under high water table conditions, it is possible that water quality data collected from GW-3 may contain data influenced by ground water beneath those portions of the refuse pile wherein there is a reversal of gradient toward the Siaperas Ditch. ~~During Covol's dredging operations, when water will be impounded within the Upper Refuse Pond, this reversal may occur and be reflected in the monitoring data.~~

Care will have to be exercised when interpreting the data to verify potential water sources. Map E9-3451 has not been changed to show this anomaly since the affected area is small and insufficient data exists to modify the map. Although a localized reversal of gradient is possible in this area, water would not flow from GW-3 to either GW-1 or GW-2. No evidence of an eastern gradient exists towards GW-2 and the Siaperas Ditch intercepts all water moving toward GW-1.

~~It has been~~ As previously requested by DOGM, ~~that~~ Well GW-5 was ~~be~~ eliminated from the monitoring program and plugged and abandoned. Also, as requested by DOGM, monitoring well GW-2 has been removed as a water quality monitoring station, but is now used to monitor water levels only. GW-5 was replaced with two new "alluvial" wells to help substantiate both "upstream" and "downstream" water quality conditions. These two wells, GW-15a and GW-15b, are located north of the Siaperas Ditch.

~~The monitoring program outlined herein therefore makes the following changes. First, eliminate well GW-2 as a water quality monitoring station. This station will still be used for the collection of water level data. Second, add well GW-15 as a new monitoring well to be placed north of the Siaperas Ditch as shown on map E9-3451. Third, abandon, seal, and reclaim dry well GW-5 using bentonite tablets. Since well GW-5 is greater than 30 feet deep this will be overseen by a licensed Utah well driller. Fourth, add well GW-16 within either the floor of the Clearwater Pond or the Lower Refuse Pond within the general area delineated on map E9-3451. Concurrence of drilling locations will be obtained prior to drilling of either of the two new proposed wells. These changes are reflected both on appropriate mapping as well as within the following table.~~

In November, 1997, four new alluvial wells were drilled; their locations were determined with the concurrence of a Division of Oil, Gas and Mining hydrologist. Wells GW-15a and GW-15b ~~were~~ are located adjacent to each other north of the Siaperas Ditch as shown on Map E9-3451. GW-15a has a total depth of 14.2 feet and is screened from 9.2 to 14.2 feet. GW-15b has a total depth of 26.1 feet and is screened from 21.1 to 26.1 feet. GW-16 is located on the Clearwater Dike, as shown on Map E9-3451; it was drilled to a depth of 69.2 feet with the bottom 10 feet being screened. GW-17 is located in the fines as shown on Map E9-3451. Its depth is 24.3 feet, with the bottom 10 feet being screened. ~~Also in November 1997, GW-5 was abandoned, sealed with bentonite, and reclaimed.~~

Table 7.28-2.
Grouping of Water Monitoring Stations

Station Grouping		**Purpose of Grouping**
Ground Water	**Surface Water**	
GW-1, GW-3, and new wells GW-15a and GW-15b		Allow review and analysis of ground water data in undisturbed and disturbed areas in the vicinity of the Upper Refuse basin. GW-1 monitors undisturbed area waters in the general area upgradient of the refuse basin. GW-3 is located under the northern (upper) end of the refuse basin and because of its location serves as an additional monitoring station for undisturbed ground water quality since ground water flow is generally from the north to the south. GW-3 may monitor flow from immediate surrounding areas under the refuse basin if the water table is sufficiently high to create a localized reversal of gradient toward the Siaperas Ditch. New wells GW-15a and GW-15b have been located immediately adjacent to each other, they will obtain samples from shallow and deeper alluvial waters. Wells GW-15a and GW-15b were not drilled into nor do they have contact with the Mancos Shale, and are capable of collecting upstream "undisturbed" waters.
GW-2		This well will continue to collect ground water level data which will be of value in determining local ground water gradients.
GW-4, GW-6, and new wells GW-16 and GW-17		Allow review and analysis of ground water data in undisturbed and disturbed areas in the vicinity of the Lower Refuse Basin. All these wells are located at the south and southwest end of the lower refuse basin which likely receives the majority of ground water flow out of the slurry pond area. Care must be taken when reviewing data collected from gGW-6 since it has a potential to be impacted by the river when water levels are sufficiently low. New well GW-16 is screened in alluvium below the Clearwater Dike, and GW-17 is screened in the coal fines of the Lower Refuse Pile near the Clearwater Dike. This will help confirm conclusions made within the MRP regarding potential short and long term impacts caused by the presence of the refuse ponds. With the installation of GW-16 and GW-17, well GW-6 can be used to represent a blended mix of slurry and river waters.
GW-5		Since this well has been dry for several years, it was abandoned, sealed and reclaimed in November 1997.

Station Grouping		Purpose of Grouping
Ground Water	**Surface Water**	
GW-7, GW-12, GW-14		Monitor alluvial groundwater down-gradient of the SMCRA permitted area west of the Price River including the coarse refuse pile. Allow review and analysis of ground water data at lower end of disturbed areas in the vicinity of the surface facilities. All three Stations lie west of the Price River and east of the railroad loadout tracks.
GW-8, GW-9, GW-9B		Monitor alluvial groundwater in the vicinity of the coarse refuse pile and surrounding area. Allow review and analysis of ground water data in downgradient areas in the vicinity of the Coal loadout stockpiles.
GW-10, GW-11		Allow review and analysis of ground water data in disturbed areas surrounding the main surface facilities. These wells lie east of the main offices.
GW-13		Allow the review of undisturbed or baseline ground water conditions west of the general office area. The well lies west of the main offices and the overall gradient in the area of this well is to the east.
	SW-1, SW-2, SW-2a, SW-8	Allow the review, analysis and comparison of both undisturbed and disturbed surface waters of the Price River within the vicinity of the Price River Terminal Loadout Facility. SW-1 is located on the Price River upstream of any point of influence (including the confluence of the Siaperas Ditch with the Price River). SW-2 lies on the Price River near the Clearwater Pond and measures flow quantity only. SW-2a monitors water quality only and is located downstream of all potential inflows. SW-8 was historically a potential point source of inflow into the Price River but recently has been dry.
	SW-3, SW-4, SW-5	Allow review, analysis and comparison of both undisturbed and disturbed surface waters within the vicinity of the upper Refuse Basin.
	SW-6, SW-7	Allow review, analysis and comparison of both undisturbed and disturbed surface waters within the vicinity of the lower Refuse Basin.

According to available information well GW-2 was completed in either a shale or alluvial clay zone. Under either condition, it is doubtful that the well is reporting accurate and/or timely ground water conditions. If in a shale, the well will not be reporting alluvial flow quality. If in clay, the well would be sampling alluvial zones, but the response time would be so long that the well would not represent timely alluvial quality typical of the higher permeability zones found at other locations. For these reasons it was decided to cease the collection of water quality data from this station.

It has been determined that well GW-3 may monitor upstream and downstream refuse pile water quality depending upon water level conditions. Cross section analysis shows that the Siaperas Ditch acts as a local ground water drain and may reverse local water gradients from the south to the north when water within the well rises to about the 20.6 foot level. When the water level is below this point, flow will generally continue to the south with some potential impacts on water quality.

~~With the above-described changes to the monitoring plan, all potential ground water impacts from the CWP will be adequately described; no additional new wells are planned or needed to cover the CWP operations.~~

SURFACE WATER

The Price River Terminal is ~~WCLF and the CWP are~~ located within the central portions of the State of Utah within the Price River drainage. The Price River drainage is located mainly in Carbon and Emery counties and comprises an approximate drainage area of 1,900 square miles. The Price River drains the north end of the Wasatch Plateau and the western portion of the Book Cliffs. As the water flows to the south it is diverted in an east-southeast direction around a locally present geologic dome (the San Rafael Swell).

Regional drainage basin topography ranges in altitude from 10,443 feet within the headwaters of the Price River at Monument Peak to about 4,200 feet at the confluence of the Price and Green rivers. Precipitation over the entire drainage basin varies greatly due to changes in elevation. According to Utah Division of Water Resources (1975), normal annual precipitation can be in excess of 30 inches at higher elevations and less than 8 inches at lower elevations. Most of the annual precipitation which falls within high basin elevations occurs between the months of October and April as snowfall.

Surface water resources within the area of the Price River Terminal ~~loadout and the CWP~~ include the Price River which flows diagonally, northwest to southeast through the permit area (see Drawing F9-177) and several ephemeral drainages which are tributary to the Price River. Price River flows recorded by the USGS at the Price River Terminal ~~loadout facility~~ are presented in Table 7.28-3.

Surface water sampling stations established by the applicant for the monitoring of the surface water system include stations identified as SW-1 through SW-7~~8~~ on map E9-3451. Stations SW-1 and SW-2 are located on the Price River upstream and downstream of the facility respectively. Stations SW-3 and SW-6 are both located in undisturbed areas east of the Upper Refuse Basins. SW-4 is located on the lower Siaperas Ditch before its confluence with the Price River, and SW-5 and SW-7 are located at the outlets of the Upper Coarse and Fine Refuse Basins respectively. SW-8 is located west of the Price River. ~~in the area of the main operations facilities.~~

Of the stations monitored, data records indicate that station SW-3 has not experienced flow during the life of the station. SW-3 is located on an undisturbed ephemeral drainage up-stream of the tailings ponds.

Sampling records for stations SW-4 through SW-7 indicate that between late 1985 and early 1988 flow at these sites transitioned from perennial to ephemeral. This transition was due to 1) the cessation of operations at the preparation plant, 2) the associated cessation of discharge to the tailings ponds, and 3) a natural decrease in precipitation and associated runoff. As the source of the water in the tailings ponds diminished through either evaporation of seepage, the flows recorded at the surrounding stations declined. Under the recent runoff configuration, surface stations SW-3, SW-4, SW-6, and SW-8 were expected to receive runoff only following a precipitation event and stations SW-5 and SW-7 will note runoff only following a major precipitation event. ~~Stations SW-5, SW-6 and SW-7 are likely to again experience more frequent flows as water used in the dredging process and water contained in the redeposited tails is decanted from the Northwest Pond to the Upper Refuse Pond, then to the Lower Pond and finally to the Clearwater Pond.~~ Flow variations for Stations SW-1, SW-2 and SW-4 are apparent in the monitoring data~~shown in Figure 7.24-6~~. No flows are available for the other stations monitored.

Sample point SW-8 ~~is~~was located at the location of the historic overflow of the plant water sump. With the cessation of operations of the plant and changes in the maintenance activities in 1988, no overflow discharge has occurred in recent years. As a result, no samples are available for this station since 1988. Consequently, SW-8 is being removed from the monitoring plan.

Because of site specific conditions including both natural drainage flow paths and existing runoff control facilities, it is believed that no additional monitoring will be required nor implemented beyond the current monitoring program. Station specific reasons for this conclusion are outlined in Table 7.28-4.

Table 7.28-4
Additional Monitoring Needs and Requirements

STATION	COMMENT
SW-1	This station is located on the Price River, has perennial flow and is monitored regularly as part of the quarterly water monitoring program.
SW-2	This station is located on the Price River, has perennial flow and is monitored regularly as part of the quarterly water monitoring program.
SW-3	Station SW-3 monitors an undisturbed watershed area and is not impacted by operations at the Price River Terminal ~~the loadout or related facilities,~~ therefore no monitoring is required.
SW-4	This station is located at the downstream end of the Siaperas Ditch which was installed pre-law as an irrigation tail water ditch. The only disturbance tributary to this station which is associated with the PRT ~~loadout~~ facility is a small strip of ground (approximately one acre in size) adjacent to a roadway which parallels the ditch. The use of this station as an ephemeral sampling location would be poor due to 1) high natural erosion rates in the ditch and 2) potential contribution of high salt loadings along the Siaperas Ditch. The potential for high salt loadings along the Ditch was visually observed on south facing slopes in the field on November 1, 1994 by both Hansen, Allen & Luce as well as DOGM personnel. Additional information regarding high salt loadings is provided later in the section entitled Water Quality Impacts. Sampling this station with these potential contributions would put the results in suspect and effectively render them useless in determining any potential impact contributed from the small alternate sediment control area paralleling the ditch.
SW-5	This station monitors outflow from the upper refuse basin, and is monitored when the structure spills. Monitoring under this scenario already includes perennial as well as ephemeral events.
SW-6	This station monitors outflow from the lower refuse pond, and is monitored when the structure spills. Monitoring under this scenario already includes perennial as well as ephemeral events.
SW-7	This station monitors outflow from the Clearwater Pond, and is monitored when the structure spills. Monitoring under this scenario already includes perennial as well as ephemeral events.
~~SW-8~~	~~This station monitors existing flow as part of the current and future surface water runoff conveyance facilities. Since the water is collected and treated through surface containment, the storm water regulations do not apply.~~

Uses and Rights

The Price River is a perennial stream used as a supply for domestic, irrigation, and stock watering purposes. Because of rapidly decreasing water quality within the lower reaches of the river system, domestic or municipal uses of the Price River are generally confined to upper stream reaches. Irrigation and stock watering uses occur throughout its length. A listing of water rights was provided earlier within the hydrologic section of this permit application.

Seasonal Fluctuations

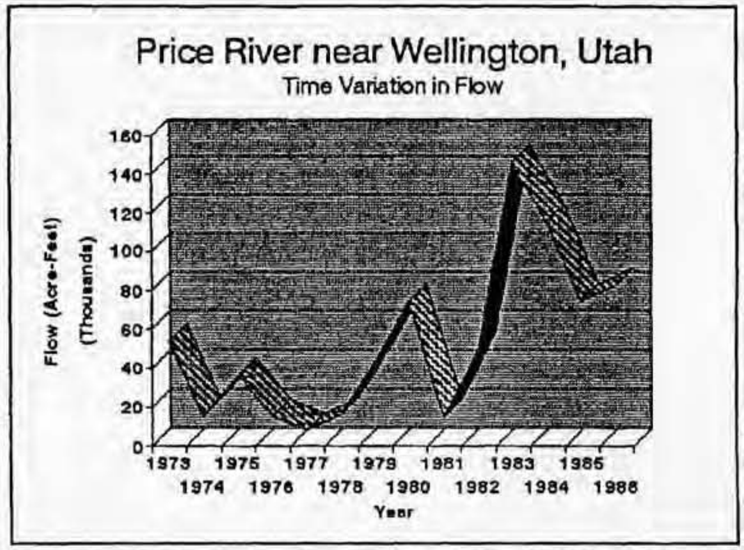
Streamflows in the Price River fluctuate seasonally in response to the seasonal variations in precipitation and temperature. Waddell, et al. (1981) reports that 50 to 70 percent of the streamflow from the Book Cliffs and Wasatch Plateau occurs during the period between May through July as a result of snowmelt and spring runoff, with most of the flow originating from the Wasatch Plateau drainages. The USGS (1990) maintained a stream gaging station on the Price River below Miller Creek near Wellington, Utah for the period between 1972 and 1986. The station was discontinued in 1986. Stream flow data for the available period of record has been reproduced in Table 7.28-3. This table has been further analyzed in Tables 7.28-3b and 7.28-3c.

Two stations on the Price River are monitored as part of this MRP, one up- and one down-stream of the permit area (monitoring stations SW-1 and SW-2); the streamflow data has been obtained since 1986 is reproduced in Table 7.28-3d.

Table 7.28-3d
Price River Flow Measurements by EarthCo
1986-1997

	Reported Flow Rate in GPM	
Date	SW-1 Price River Upstream of Permit Area	SW-2 Price River Downstream of Permit Area
10/88	8000	9400
03/90		5265
06/90		3523
09/90		3042
12/90		2690
03/91		8443
09/91		5655
12/19/91		7163
03/26/96	10	10
03/24/97	390	385

Figure 7.28-1 Price River Flows (1973-1986)



———The seasonal variation in flows shown in the table indicates that the highest flows typically occur in the spring followed by gradual declines throughout the summer period. Fall and winter flows are the lowest as is typical of streams which derive most of their flow from direct or delayed snowmelt. Data shown in Figure 7.28-1 illustrate the low flow period of record during the mid to late 1970's with record runoffs recorded in 1983 and 1984.

———Widespread data documenting a drought since the mid 1980's throughout the area would indicate that recent flows should be reminiscent of data found in the mid to late 1970's. The overall decrease in flows has resulted in water quality variations at the sampling stations identified in the monitoring plan. ~~Data flow plots for stations with recorded flows since 1985 were shown previously on Figure 7.24-6.~~ Discharge rates measured in the Price River at stations SW-1 and SW-2 through 2014 have been submitted electronically to the Division's database.

Surface Water Quality

———**General.** Water quality in the Price River drainage varies considerably due to local drainage basin geology. As reported by Mundorf (1972), dissolved solids concentrations within the upper reaches of the Price River above the confluence with Spring Canyon are generally less than 400 mg/L with calcium and bicarbonate being the major cation and anion.

———Below the Spring Canyon Confluence, inflow is mainly from streams which drain Cretaceous marine shales. These shales are commonly carbonaceous or gypsiferous and are the predominant geologic influence on the quality of water in the central portion of the Price River basin (Mundorf, 1972). Significant amounts of salts are leached from the marine shales and shale-derived soils by natural surface runoff and by irrigation activities. This natural runoff and the return flows from irrigation cause a marked change in the chemical characteristics of the water as the Price River crosses the central basin. Mundorf (1972) reports that at Wellington, total dissolved solids concentrations range from 600 to 2,400 mg/L in the Price River. He also indicates that the major cations and anions are a variable mixed type. About 22 miles from the mouth of the river, at Woodside, the dissolves-solids concentration typically ranges from 2,000 to 4,000 milligrams per liter and the water is a strong sodium sulfate type (Mundorf, 1972).

~~The water quality of the Price River in the area of the loadout facility is presented in Table 7.24-6.~~ Water quality in the Price River monitored at stations SW-1, SW-2 and SW2a have been submitted to the Division's on-line water quality database. A strong sodium-sulfate water, with a predominantly neutral to slightly basic pH, the quality of the river flow is quite similar to the water quality found in the alluvial ground water system.

———~~Data included within Appendix 7.28-2 was reviewed to determine if a significant correlation exists between water quality parameters and precipitation.~~ Data obtained from the National Weather Service for the Wellington 3 E Station is included in Table 7.28-3a. Depending upon how it is calculated, average precipitation for the Wellington site is approximately 9.2 inches per year. Using this average it would appear that precipitation was generally near or above normal for the periods between 1980 through 1987 and 1992 through 1994, and near or less than normal for the period 1988 through 1991. Comparison of this data with that included within Appendix 7-28-2 for both surface and ground water stations shows no observable correlation. Some stations show fairly marked increases or decreases during the period of record, however, the changes do not appear to correlate well with variations in precipitation.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1980	0.51*	0.53*	0.95*	0.74*	0.74*	0.01	0.56	1.53	3.00	1.35	0.10	0.02	10.04
1981	0.06	0.29	1.35	0.62	0.83	0.23	0.41	1.22	1.69	2.38	0.26	0.30	9.64
1982	0.96	0.13	1.38	0.00	0.36	0.04	0.32	1.21	1.86	0.25	1.59	0.82	8.92
1983	0.80	0.78	1.23	0.45	0.42	0.23	2.05	0.50	1.80	0.51	1.59	1.34	11.70
1984	0.20	0.14	0.19	0.42	0.09	1.07	1.27	1.93	0.46	1.74	0.50	1.41	9.42
1985	0.33	0.04	0.73	1.07	1.14	0.39	1.59	0.00	2.25	0.39	1.30	0.40	9.63
1986	0.07	0.83	1.09	1.19	0.46	0.24	1.15	0.92	1.63	0.86	0.13	0.17	8.74
1987	0.41	0.72	1.21	0.74	0.94	0.52	2.23	1.64	0.01	1.77	1.32	0.77	12.28
1988	1.12	0.00	0.27	2.14	0.42	0.40	0.09	0.44	0.59	0.53	0.63*	0.51	7.14
1989	0.38	0.17	0.50	0.00	0.48	0.12	1.43	1.64	0.80	0.25	0.05	0.08	5.90
1990	0.27	0.55	0.80	0.54	0.49	0.48	1.20	0.33	2.64	0.27	0.03	0.33	7.93
1991	0.51*	0.08	1.32	0.27	0.93	0.72	0.27	0.75	1.67	0.34	0.43	0.14	7.43
1992	0.51*	1.32	0.91	0.12	2.16	0.21	1.48	0.73	0.82	1.56	0.38	1.16	11.36
1993	1.53	1.65	1.53	0.36	1.41	0.25	0.27	0.52	0.14	1.43	0.63*	0.14	9.76
1994	0.00	0.76	0.95*	2.44	0.23	0.06	0.03	0.58	1.38	0.97*	0.52	0.62	8.54

* = Average Monthly Value

Iron. Total iron concentrations within the natural system are quite variable as is indicated by water quality data from stations SW-1 and SW-2 on the Price River. Upstream station SW-1 shows total iron concentrations ranging from 0.1 to 53.8 milligrams per liter. Station SW-2 shows similar and almost identical data. Since the samples are not filtered, total iron analyses include both dissolved constituents and iron in the sediment collected in the samples. During the period of record when Station SW-5 flowed, similar fluctuations were noted to occur. Stations SW-4, SW-6, SW-7, and SW-8 show only minor fluctuations in total iron concentration. Iron concentration data through 2014 have been entered into the Division's on-line water quality database.

According to the data time plots shown in Figure 7.24-1 there is not an area which contributes a major source of iron to the local surface water system. At first glance, it appears that 1) SW-5 may contribute relatively large amounts of iron to the Price River, however, SW-5 passes through SW-7 before entering the Price River, and 2) the variation shown in both SW-6 and SW-7 is small (on the order of 1/100th the amount of natural fluctuation noted in the data from SW-1 and SW-2). When combined with the effect of dilution, impacts are small to negligible.

Since total iron includes the amount noted in sediments, the decrease shown over time for SW-1 and SW-2 may be the result of decreased streamflow conditions. When Price River flows increase, total iron may show a corresponding increase as shown in the summer of 1985 and 1986.

Manganese. As shown in Figure 7.24-2, summer manganese (Mn) values are typically higher than those found to exist during winter months. Surface stations SW-1 and SW-2 show similar variation in Mn throughout the period of record. Without extensive analyses, or the benefit of additional data, it appears that the slightly higher Mn values recorded in 1985 and 1986 at station SW-2 may have been the combined result of inflow from stations SW-4 through SW-7.

pH. No surface water runoff data evaluating pH is available from the historic loadout site since December of 1984. As with other water quality parameters, Figure 7.24-3 shows relative consistency between surface water stations SW-1 and SW-2 on the Price River. A review of water quality data shows equal averages for both stations with no increase at downstream station SW-2.

TDS. As can be seen in Figure 7.24-4, the TDS concentrations in the surface water system show an inverse correlation to seasonal flow variations. As flow increases in the spring, TDS concentrations decrease, while as flows decrease through the summer and into the fall and winter period, TDS concentrations increase. Because of the relationship between TDS and the major cations and anions, similar fluctuations in the cation and anion concentrations can be seen upon close examination of the water quality data.

By comparing the quality of water from samples from stations on the Price River at Station SW-1 (upstream from the facilities area), and SW-2 (downstream from the facilities area), a slight increase in TDS concentration is noted ~~(See Table 7.24-6)~~. Increased concentrations are expected in the Price River due to the increased salt load caused by the additional contact time with the sediments and salts of the marine shale derived soils. It is certain that additional TDS concentrations historically were ~~are~~ also the result of increased loadings from property associated with the loadout facility. The increases at this time, however, appear to be minimal since the nature of the operation has changed and runoff is only intermittent. Within the past many ~~few~~ years runoff has not occurred from the Upper and Lower refuse basins from which the majority of TDS concentrations could originate.

TSS. As can be seen on Figure 7.24-5, total suspended solids concentrations have decreased markedly since the historic highs recorded in 1985. The decrease appears to be attributable to two basic conditions. The first is that the loadout facility ceased operations in 1984 and the second is that drought conditions have prevailed since 1986. No definable consistent variation in TSS is noted at Stations SW-1 and SW-2 by the available data. Under the current operation procedures, no contribution to TSS is noted from other surface sources. It must be recognized however that under storm conditions, TSS concentrations will increase in the Price River throughout the areas of the storm, including the reach of the river adjacent to the Price River Terminal ~~loadout facility~~.

GROUND WATER

Ground water resources in the vicinity of the Price River Terminal ~~within the WCLF~~ generally consist of shallow ground water aquifers of limited or marginal water quality. At increasing depths local subsurface geology consists of alluvium, Bluegate Shale, and Ferron Sandstone. The alluvium has been found locally to consist of an approximate 35 foot layer of sandy gravel mixed with clay. The sandy gravel layer of this upper zone is generally located within the lower portion of the alluvium and is the zone in which the shallow unconfined aquifer is located.

Local wells have not penetrated the Bluegate Shale (with the exception of GW-14) and therefore little information is contained herein related to its depth or the underlying characteristics of the Ferron Sandstone. The well log from GW-14 shows a 2 foot layer of saturated, soft, gray-dark gray shale from the 33 to the 35 foot depth, underlain by a tan-buff color sandstone. Well logs from GW-3, GW-7, GW-8 and GW-11 show minimum shale thicknesses ranging from two to nine feet thick. The evaluation contained herein related to the Ferron Sandstone has been developed from information provided by old oil exploration well logs.

As a general rule ground water resources within the Price River Terminal area ~~of the loadout~~ include water contained within the shallow alluvial aquifer as identified above. As shown on map E9-3451, the general direction of local groundwater movement is to the south with the basic flow configuration in the direction of the Price River. With the limited amount of data available it is believed that the river is a "gaining" reach in the vicinity and thereby receives water from the surrounding shallow groundwater aquifer.

Ground water sampling stations previously established by the applicant that have been used for historical monitoring ~~for the monitoring~~ of the ~~ground water~~ aquifer include Stations GW-1 through GW-4, and GW-6 through GW-16, the locations of which are shown on Map E9-3451.~~-~~ Station GW-2 was ~~is proposed to be~~ eliminated as a water quality monitoring station (although water level is ~~will~~ still ~~be~~ collected), station GW-5 was ~~has been proposed to be~~ eliminated, abandoned, sealed and reclaimed in 1997.~~, and~~ Stations GW-15a, GW-15b , GW-16 and GW-17 were ~~are proposed to be~~ added as new water quality monitoring stations. ~~(In November 1997, GW-5 was eliminated, abandoned, sealed, and reclaimed, and stations GW-15a, GW-15b, GW-16, and GW-17 were installed and added as new water quality monitoring stations.)~~ A discussion related to the positioning of each identified station was previously given in Table 7.28-2. Considering 1) the direction of ground water movement, 2) the slope of the water table, and 3) estimates of aquifer permeability, an approximation of ground water velocity have been made. The average tested permeability reported in Table 7.22-8 for wells GW-6, GW-8, and GW-14 is 0.019 ft/min. Wells GW-2 and GW-9B were not included within the averaging because they were not believed to be representative of local aquifer conditions. Using this estimate, ground water velocity is estimated to be approximately 0.3 feet per day, or 100 feet per year.

No significant correlation was found to exist between sampled water quality and precipitation as indicated earlier in the discussion related to surface water quality.

Uses and Rights

———The Price River is a perennial stream used as a supply for domestic, irrigation, and stock watering purposes. Because of rapidly decreasing water quality within the lower reaches of the river system, domestic or municipal uses of the Price River are generally confined to upper stream reaches. Irrigation and stock watering uses occur throughout its length. A listing of water rights was provided earlier within the hydrologic section of this permit.

Seasonal Fluctuations

———Streamflows in the Price River fluctuate seasonally in response to the seasonal variations in precipitation and temperature. Waddell, et al. (1981) reports that 50 to 70 percent of the streamflow from the Book Cliffs and Wasatch Plateau occurs during the period between May through July as a result of snowmelt and spring runoff, with most of the flow originating from the Wasatch Plateau drainages. The USGS (1990) maintained a stream gaging station on the Price River below Miller Creek near Wellington, Utah for the period between 1972 and 1986. The station was discontinued in 1986. Stream flow data for the available period of record has been reproduced in Table 7.28-3. Data from this table has been further analyzed in Tables 7.28-3b and 7.28-3c.

Two stations on the Price River are monitored as part of this MRP, one up- and one down-stream of the permit area (monitoring stations SW-1 and SW-2); the streamflow data that has been abandoned since 1986 is reproduced in Table 7.28-3c. Discharge data from Price River monitoring stations SW-1 and SW-2 through 2014 have been entered into the Division's on-line water quality database.

~~the parameter concentration. The total iron concentrations in the surface water samples of the Price River also showed variable fluctuations, through over a more limited range.~~

Early data shown in the data plots indicates that there is likely an increase in iron between well GW-1 and wells GW-2 and GW-3. Wells located at the south end of the Lower Refuse Pond show inconsistency in values. Wells GW-12 and GW-14 located west of the Price River show relative consistency, however, well GW-7 shows increasing variation in iron. The reason for this increase may be due to decreased pond water storage located within the permit area since 1984. Reduced pond storage results in a reduction in ground water infiltration and the resulting reduction in the dilution of natural ground water concentrations. No real trends are evident from wells located east and north of the coal loadout piles (GW-8, GW-9 and GW-9B) or from wells near the main office facilities (GW-10, GW-11, and GW-13). The highest values for these two well groupings were found to the west of the office area and near the trail loadout tower. No clear reason for increased values at these locations is identified.

Manganese. Increased concentrations of manganese shown in Figure 7.24-2 were found in GW-2 and GW-3 during the 1985 to 1989 period. Since that time however increases at well GW-1 approach those previously identified at wells GW-2 and GW-3. Potential increases on the order of 0.25 mg/L might also be occurring between GW-5 and GW-6 near the Clearwater Pond. Manganese concentrations along the railroad siding show inconsistency since values are highest north and south of the historic location of the main loadout facility. One possible explanation for this may be the dilution of manganese in the natural ground water by ponded surface water in the vicinity of GW-7 during the flood years prior to 1985. In the area of the coal storage pile, the highest concentrations are found to the north with little variation occurring at the south (downstream) end of the storage area. The historic location of the office area also shows that from wells GW-10, GW-11 and GW-13; that the highest concentrations of manganese are to the north and west.

pH. Little variation in pH has occurred over the period of record as shown in Figure 7.24-3. According to the data plots some local variation has occurred during short time periods, however, no long term trends nor distinct lateral variation is evident.

Selenium. As documented in "Study and Interpretation of the Chemical Characteristics of Natural Water", Geologic Survey Water-Supply Paper 1473, 1970; "Selenium is known to be highly toxic to animals, but generally, poisoning results from eating selenium-concentrated plants". The report goes on to say that concentrations in water of 0.4 to 0.5 mg/L were reported by previous researchers to be nontoxic to cattle. Selenium values reported in Chapter 2 show selenium concentrations within the upper 25 feet to range from 0.25 to 0.40 mg/L. These values are below the 0.5 mg/L values shown to be non-toxic to animals.

At pH values above approximately 6.6 in aerated water, a more stable form of selenium is in the anion selenite. Under mildly reducing conditions however, selenium takes on a more elemental form and generally has a low solubility. Since local pH values for the area appear to be well above the 6.6 value, it stands to reason that any selenium found within the refuse ponds may potentially be leached.

TDS. Local ground water has high total dissolved solids (TDS) concentrations ranging from about 1,000 to in excess of 100,000 milligrams per liter. The highest TDS values are found in wells GW-2 and GW-3 as documented on Figure 7.24-4. Both these wells are completed within the upper portions of the tailings facilities in the Blue Gate Shale hills. Some sediment was noted in the bottom of well GW-3 during the camera investigation. It is possible that the natural completion of these wells has resulted in some sediment being drawn into the casing during sampling activities and can account for the elevated total suspended solids (TSS) values in the ground water samples.

———Data shown in Figure 7.24-4 would appear to indicate that an increase in TDS occurs as water moves from the north to the south and west through the Upper Refuse basin. Data from wells GW-4, GW-5, and GW-6 indicates relative uniformity of data within the south end of the Lower Refuse pond. Water data east of the railroad tracks and west of the Price River suggest improved water quality near the previous loadout facility. Other surrounding wells also show improvement in quality as these wells are approached. The great majority of all wells show increasing TDS levels between the years 1986 and 1987. A review of conditions during this time appears to indicate that the increases noted may be the result of reduced dilution of local groundwater waters by surface pond infiltration. The loadout facility was idled in 1984, shortly before the noted increases. It appears that as the ponds dried up, less diluting of the base ground water occurred thereby resulting the noted local increase in TDS to what would appear to be natural conditions. TDS information for all sites in the Price River Terminal has been entered electronically into the Division's water quality database.

———**Water Level.** Water levels ~~shown in Figure 7.24-6~~ show increasing declines over time. As the figures are reviewed caution is given regarding the manner in which the data is reviewed. The plots have been developed showing depth to water. This type of plot is generally used to show increased pumping lifts. Do not interpret the plots as indicating increasing water levels. According to the data, a general decline in the order of 5 feet has occurred since 1986. More recent water level data has been submitted electronically to the Division's water quality database.

Aquifer Characteristics

———Two evaluations of the local aquifer characteristics have been conducted. The first was completed by Rollins, Brown, and Gunnel (1978), as part of the slope stability evaluation of the tailings dikes, and the second by Earth Fax Engineering (1990), to determine the characteristics of selected monitoring wells at the previous loadout facility. Results from these evaluations, presented in Section 7.22.1, indicate that permeability of the alluvium ranged from 0.001 to 0.24 feet per minute. Given this hydraulic conductivity range, the hydraulic gradient under the loadout area (0.005 foot per foot), and an assumed value for porosity of 0.3, typical of silty alluvial sands and gravels (Freeze and Cherry, 1979), the anticipated flow rate of ground water would range from 10 to 2,100 feet per year. The higher flow rate would be expected within the coarser gravel layer at the base of the alluvial deposits.

———Permeability of the Blue Gate Shale ranged from 0.0001 feet per minute to unmeasurable. Given this hydraulic conductivity value, the hydraulic gradient determined for the area north of the tailings (0.025 foot per foot), and an assumed porosity value of 0.1, typical of shales (Freeze and Cherry, 1979), the anticipated flow rate of ground water through the shales would be approximately 10 feet per year or less. Given the low permeability of the Blue Gate Shale and the continuous nature of the formation, it likely acts as a less permeable bed that impedes the downward movement of ground water and serves as a perching bed for the shallow alluvial ground water system.

Based on information obtained from oil exploration wells which were drilled during the 1920 to 1930 time period the Ferron Sandstone is not a significant source of ground water in the permit area, even though the town of Emery located several miles south of the loadout, uses the formation as part of its water supply. Local oil well logs described the Ferron Sandstone as containing "little fresh water", and a "show of water", with a production rate of 1 barrel per hour (about 0.002 cubic feet per second). The Ferron Sandstone may be a poor ground water source in the Price River Terminal area ~~at the loadout~~ because of limited recharge or because of limited aquifer characteristics in this area.

Based on the aquifer characteristic, the alluvium is the major ground water resource in the Price River Terminal ~~loadout~~ area. This is indicated by the water rights search, which identified six wells in the vicinity of the ~~loadout~~ facility were completed in the alluvium. Of these six, two were completed in both the alluvium and Blue Gate Shale and one was completed in the Blue Gate Shale alone. Additional information related to aquifer characteristics within the permit area can be found in Section 7.22.

7.28.3 FINDINGS OF IMPACTS

The potential sources of contamination to the hydrologic resources in the area of the Price River Terminal ~~loadout facilities~~ were identified through site visits and discussions with Mr. Candy Manzaneras, former operation manager of the loadout facility. ~~Please refer to Section 7.30 for a detailed discussion of the operations at the loadout and design specifications of the associated structures.~~ As identified by regulatory and site personnel, the potential sources of surface and ground water contamination and impact are:

- Additional sediment contribution
- Underground storage tank leakage
- Fugitive dust
- Hydrocarbon products
- Oil and grease/flammable lubricants
- Acid-Toxic materials
- Water reduction or diminution

Sunnyside Cogeneration has a contract with Price River Terminal (PRT) to remove coal refuse fines from the slurry ponds at the Wellington site. Removal of the fines will enable them to be used at a cogeneration power plant as well as being instrumental for initiation of final reclamation for that area of the Wellington site. Potential impacts to the hydrologic balance associated with these activities are also evaluated herein.

Each of these potential sources of contamination are discussed below.

Additional sediment contribution

As with any disturbed surface, additional sediment contributions to local stream waters may occur as a result of operations at the Price River Terminal ~~will be realized with continued operation of the WCLF.~~ Several surface water impoundments have however been installed to mitigate the effects of surface disturbance for both historic as well as present or future use. As a general rule, the surface impoundment facilities have capacities well in excess of that needed under current operations to meet the requirement of the regulations. ~~This excess is the result of a change in loadout operations since the facility was idled in 1984. Under Covol's operations, almost all of the sediment produced will be contained within the Refuse Basin sediment pond, which has contained and will continue to contain all runoff from Watershed #7; the Refuse Basins will continue to meet regulatory requirements for storage and spillway capacities even with the additional water impounded. Any sediment from the minimal runoff produced from laying the water pipelines that does not drain to Watershed #7 will be treated within Alternative Sediment Control Areas 4 and 5.~~

~~Under the current proposed loadout operations~~ It is not anticipated that the facility will have a significant impact upon increased sediment contribution to the Price River due to the extensive sediment pond storage capacity and other sediment control structures located within the permit area.

The removal of coal refuse fines from the slurry ponds should not cause additional sediment contribution to local streams. This is because the removal operations take place within the existing slurry ponds, which effectively isolates and contains the removal activities from surrounding surface water drainages.

The containment capacity of these Upper and Lower Refuse ponds will not be decreased by the coal fine removal activities proposed Covol construction. During operations, more than adequate containment capacity for events up to and including the 6-hour PMP will be maintained at all times. Further, the proposed redisturbance of already disturbed ground within the 589-acre watershed which drains the Lower Refuse pond will not result in any measurable change to total runoff, peak flows or sediment yield calculations previously done for this area.

Underground storage tank leakage

There are no underground storage tanks at the Price River Terminal facility. The potential impact from underground storage tanks should they exist include possible ground water contamination which would result from tank leakage due to rupture of the tank. Such a failure would limit the use of ground water in the vicinity of the Price River Terminal loadout area and, due to the connection between the ground water in the alluvium and the surface water flow, it is possible that contamination of the surface water in the Price River, downstream from the facility, could also occur. However, according to information received from the Plant Manager during a site visit in October of 1991, no underground or hidden storage facilities or contamination sources exist on site.

Since it was indicated during the site visit that no underground tanks currently exist, nor are any planned for the future, mitigation measures are not currently required. Should it be found however that unknown sources do exist, mitigation measures to minimize or eliminate adverse impacts at the Wellington loadout and vicinity includes removal of the underground storage tanks and implementation of an approved Spill Prevention and Containment and Control plan (SPCC). Under unforeseen conditions, the tank will be removed and the soils monitored and cleaned-up according to the requirements in the Utah Division of State Health, Underground Storage Tank Rules.

Fugitive dust

All operations at the Price River Terminal facility will be conducted in compliance with the requirements of the Clean Air Act (42 U.S.C. Sec. 7410 et seq.) and any other applicable state and federal statutes and regulations containing air quality standards.

The potential impacts of fugitive dust from the Price River Terminal Wellington Loadout include reduced air quality in the area of the facility and a small decrease in the surface water quality of the Price River. The air quality degradation that could potentially occur would result from particulate emissions from the roads and unpaved areas of the pad, and from reclamation activities, and from loadout operations. The water quality degradation and sediment loading increase would result from the settlement of dust within the river. Covol's mining and operation activities will not substantially add to this impact.

These impacts will continue to be mitigated by the use of paved access roads and use of water trucks to spray the unpaved roads, reclamation, and pad areas. This will minimize the dust production from these areas. Through the reclamation/removal of coal fines from the slurry ponds, the long-term fugitive dust generation potential from these pond areas will be diminished. In addition, dredging as the mining technique during most of Covol's operations will further reduce the potential for dust production from the Refuse Basin Ponds.

The potential water quality degradation will be monitored using sampling points SW-1 and SW-2. These points will evaluate any significant degradation of the surface water quality in the Price River. To date, no impact has been noted.

Hydrocarbon Products

The use of oil, grease and flammable hydrocarbon-based products within the Price River Terminal loadout area creates the possibility of contamination within the facilities area. The contamination could result from spillage of these products during maintenance of the loadout equipment, accidental spillage during filling of above-ground tanks, or leakage from equipment during operations. Such contamination could impact the soils, ground water and possibly surface waters downstream of the facility. Potential sources of contamination include the locations identified by the Plant Manager as shown in Table 7.28-4. ~~The location of gasoline based products including diesel and gasoline are shown on Map 712d. The shop building shown on the drawing is also used to house all other oil, grease, antifreeze etc. and is used as the site for all truck maintenance. Trucks too large to fit into the shop are cleaned and have their oil changed in back of the shop in the general shaded area as shown on map 712d. Fuel oil and lubricants were stored in the Covol modular coal fines was plant located on Figure 5.12-1. No. 2 Diesel was added to the coal at the CWP to provide floatation of the coal particles, and was also used to fuel some of the heavy equipment used on-site. Additional information related to the location of the other surface facilities may be found in Section 5.0.~~

The impact from spillage during maintenance activities and during filling of tanks will be mitigated by the implementation of the SPCC plan. ~~The gasoline and diesel fuel storage tanks currently constructed without containment structures will be modified as follows. The tanks will be moved and any contaminated soil currently found beneath the tanks will be removed and properly disposed of, after which rectangular concrete bases will then be constructed with volumes adequate to contain the maximum storage potential for the facilities. Designs for the containment of Diesel and Gasoline fuels are included as part of Appendix 7.28-1. It is important to note that the designs can and should be modified to fit both existing and future tanks as required to obtain total containment with an adequate freeboard. It is not the horizontal dimensions but the total volume. Based on the tank volumes provided by the operator of 2,000 gallons diesel and 500 gallons gasoline, the containment facilities must contain a 2,000 gallon spill. The tanks will then be placed in the concrete containment bases thereby preventing the contamination of local soils or ground water during filling. These containment pads will be placed at the same sites as the tanks currently occupy. New hydrocarbon storage tanks associated with the Covol wash plant will be placed within similarly constructed concrete containment pads.~~

~~Monitoring well GW-9B, GW-10, GW-11, and GW-12 would be used to evaluate the presence of hydrocarbon product contamination in the event that future spills occur at the loadout facility by sampling for Volatile Organic Carbons. Further, quarterly monitoring of BTEX-N at GW-4, GW-6, SW-4, and SW-5 would be used to determine whether or not the No. 2 diesel is adversely impacting surface or ground waters.~~

Table 7.28-4

Potential Sources of Hydrocarbon Contamination

Contamination Source	**Comment**
Dust Suppressant	• This material consists of soap and water, is used on coal piles, and is located in 55 gal. drums housed in storage building. • During summer periods, water is sprayed on roads as a dust suppressant. • During winter periods salt may be applied to roadways between the property gate and the coal piles.
Maintenance Operations • On site	• Performed at fueling station
Oil • Storage • Deposition	• For Covol's operations, oil will also be stored at the plant site in a 10,000 gallon above ground tank. • Very minor amounts of diesel, which is bound to the refuse, ins returned to the Northwest Pond and the Upper Refuse Basin.
Underground storage tanks	• None located on site.
Waste Disposal • Liquid • Solid	• Septic tank system with drain fields. Drain field lies Northwest of main Office. • Contracted to "City Sanitation". •Contracted with 3rd party environmental services company to provide 55 gallon drums for oily rags.

Other Reagents

The CWP used two agents in processing coal in addition to the No. 2 diesel discussed above. CM-630 Floatation Frother (which consists of tripropylene glycol *n*-propyl ether and propylene glycol *n*-propyl ether) and sodium silicate solution were stored at the CWP and added to the coal at the floatation cells. The former agent was used for frothing, and the latter is a de-slimmer. The presence of propylene glycol was analyzed quarterly at monitoring sites GW-4, GW-6, SW-4 and SW-5 through the 3rd quarter of 2012. Results from those analyses were used to determine whether or not these reagents area adversely impacted surfaces or ground waters. These two agents are no longer used at the Price River Terminal.

Water Reduction or Diminution

The impacts to the hydrologic balance are discussed within the following section.

7.28.3.1 Impacts to the Hydrologic Balance

As presently envisioned, the operations of the Price River Terminal ~~Wellington Loadout facilities~~ will not be water intensive; therefore, it is not believed that significant impacts will occur from the facilities operations to the surrounding water levels. Some minor impact however may result from a reduction in runoff as surface water flows are contained.

within Surface impoundments which are required by the regulatory agency to control water quality. These effects however are believed to be of minor significance since runoff only occurs in response to local rainfall, and since rainfall within the general area is small. The majority of water found within the area is from limited aquifer resources and flows within the Price River. As with other areas of the region and State, current declines in water level and or river flow are believed to be the result of climatic variations and not previous loadout operations. However, in the unlikely event that a significant diminution in water level in the surrounding wells or in the stream flow were to be caused by the Price River Terminal Wellington Loadout operation, the owner/operator will replace the water with on-site water which they have access to. It must be remembered that this possibility is highly unlikely since no changes in the facilities operation are planned which could possibly impact the local water resources.

The existing ground water monitoring network was used to monitor fluctuations in the ground water surface and predict potential impacts due to loadout operations and mining and operations associated with the CWP. The surface water sampling sites SW-1 and SW-2 were used to evaluate the impacts of both operations on the surface water resources of the Price River which passes through the area.

No impacts to the hydrologic balance are anticipated as a result of the reclamation activities (coal fines removal) at the slurry ponds.

7.28.3.2 Acid/Toxic forming material containment potential

———Overall impacts which could result from acid-toxic materials contamination are decreased water quality in the alluvial ground water system and in the surface water of the Price River. The quality decrease would result in increased TDS and decreased pH concentrations for downgradient and downstream flows. If significant, such impacts could potentially reduce the usability of downgradient water for irrigation and stockwatering.

———In evaluating these impacts, laboratory results of leachate samples from the coarse refuse pile and samples of refuse material from the fine refuse basins were reviewed as presented in Tables 7.28-5 and 7.28-6. Soils analyses from sampling conducted in 1994 for depths up to 8 feet are also included in Table 7.28-7. The leachate samples presented indicate that waters percolating through the coarse refuse will have high salt concentrations, slightly basic pH values, and have a high sodium adsorption ratio. This is quite similar to the water quality in the local ground water system. The basic pH values indicate that there is little potential of acid leachate developing from the coarse refuse. Additionally, the similarity of the leachate and the background or baseline ground water quality indicates that the potential is minimal for negatively impacting local groundwater. For example, a review of ground water data for Stations GW-7 through GW-14 (those located west of the Price River) ~~shown in Appendix 7.28-2~~ indicates that TDS typically ranges between 3,000 and 16,000 mg/L. The leachate TDS value reported in Table 7.28-5 is 7,070 which is well within this TDS range. A tighter comparison with baseline undisturbed stations only shows leachate TDS (7,040 mg/L) to be in the same general range as that for background station GW-15 (6,603 mg/L).

———Data comparisons were also made between the leachate and stations GW-1 and GW-14 for calcium and magnesium. Leachate calcium (76 mg/L) and magnesium (18.2 mg/L) is 0.2 to 0.3; and 0.05 to 0.08 times that found in the two ground water stations respectively and leachate sodium (1,270 mg/L) is on the same order of magnitude as station GW-14 (1,187 mg/L) and well within the range of other local ground water stations.

~~During Covol's operations, the coarse refuse will not be mined, and nor will water be added to this area, thus no changes in leaching potential or leachate quality are anticipated from this source.~~

~~During the life of the operations,~~ Ground water monitoring points GW-7, GW-8, and GW-9~~b~~ will be utilized to evaluate the potential for acid-toxic leachate contamination from the coarse refuse pile. Additional data, details and discussion related to the acid-toxic forming potential are found within Chapter 2.

Table 7.28-5
Laboratory analysis of leachate from the Plant Refuse Pile

Parameters	Analyses	Parameters	Analyses
Percent clay	1.5	Alkalinity	142
Percent silt	12.5	Calcium as Ca (ppm)	76
Percent sand	2.5	Conductivity (umhos/cm)	250
Percent gravel	83.5	Magnesium as Mg (ppm)	18.20
Percent coal	<0.01	Percent saturation	20.40
Texture	Gravel	Sodium adsorption ratio	33.97
pH	8.4	Sodium as Na (ppm)	1,270
Acidity as $CaCaO_3$	<0.01	Total Dissolved Solids (mg/L)	7,040

Table 7.28-6
Acid base potential analyses for Fine Refuse Basins

Location	Depth (feet)	Total sulfur (percent)	Total sulfur acid base potential (t/1000t)	Neutralization potential	Total sulfur acid base potential excess (t/1000t)
#17	0.0 – 0.5	0.63	19.7	54.0	34.3
	0.5 – 1.0	0.56	17.5	60.8	43.3
	1.0 – 2.0	0.54	16.9	64.3	47.4
	2.0 – 5.0	0.59	18.4	67.2	48.8
	5.0 – 8.0	0.67	20.9	60.7	39.8
	8.0 – 11.0	0.74	23.1	73.3	50.2
	11.0 – 14.0	1.20	37.5	98.5	61.0

The fine refuse sample results also indicate that the materials found within the pond are not acid producing. Some potential for toxicity however exists due to slightly elevated levels of boron and selenium. The non acid potential is indicated by the neutralization potential being greater than the total sulfur acid base potential. As these results are based on total sulfur rather than total nonsulfate sulfur, the results are conservative indicators. Analyses of both the liquid and solids components of the slurry from a bench scale test of the fines are provided in Appendix TW and Appendix WT, respectively. As shown, the solids components of the slurry (analyzed as a soil paste extraction) showed similar or even greater neutralization potential and total sulfur acid base potential excess than those reported in Table 7.28-6 for the in-situ fines. Further, any impacts to groundwater as a result of redepositing tailings would be expected to be similar to those that occurred during U.S. Steel's operations when the tailings were initially deposited. During reclamation operations, groundwater monitoring wells GW-4~~, GW-5,~~ and GW-6 will be used to confirm that acid leachates are not forming. Additional data, details, and discussion related to the acid-toxic forming potential are found within Chapter 2.

The removal of coal refuse fines from the slurry ponds should not cause additional potential for impacts resulting from acid- and toxic-forming material. The removal operations takes place within the existing slurry ponds, which effectively isolates and contains the removal activities from surrounding surface water drainages. The physical removal of the coal fines from the property will reduce any potential for interactions between the coal fines and the environment at the facility.

Table 7.28.7
1994 Soils Analysis with Depth

Samp. Station	% ACID					% BASE					BORON					SELENIUM				
	1	2	3	4	8	1	2	3	4	8	1	2	3	4	8	1	2	3	4	8
SP-1	0.01	0.27	0.31	1.14	0.28	53.38	48.48	50.00	47.10	48.63	13.40	7.98	7.17	4.98	4.76	0.16	0.17	0.12	0.15	0.11
SP-2	0.40	0.33	0.35	0.39	0.36	38.95	75.23	62.00	59.43	68.40	17.66	9.16	8.92	8.64	7.91	0.26	0.11	0.18	0.20	0.19
SP-3	0.39	0.25	0.25	0.28	0.25	81.28	55.28	85.90	29.93	45.95	26.74	8.17	4.83	5.30	5.47	0.21	0.16	0.14	0.13	0.17
SP-4	0.26	0.25	0.18	0.19	0.26	49.03	55.98	50.40	29.30	89.33	8.84	7.121	5.39	5.92	3.34	0.09	0.12	0.14	0.11	0.12
SP-5	0.18	0.17	0.15	0.20	0.24	50.30	48.90	42.58	64.75	31.83	7.05	5.14	3.61	5.05	5.14	0.09	0.02	0.10	0.14	0.29
SP-6	0.19	0.20	0.18	0.28	0.23	45.10	62.90	78.58	99.98	64.60	9.16	4.38	4.38	6.61	6.11	0.23	0.15	0.12	0.17	0.30
CR-1	0.04	0.19	0.27	0.23	0.24	123.4	119.8	23.38	115.8	44.85	1.53	1.59	1.81	2.04	3.37	0.06	0.06	0.08	0.09	n/1
CR-2	0.21	0.26	0.32	0.28	n/a	33.10	29.55	34.83	19.18	n/a	3.26	2.92	3.08	3.32	n/a	0.07	0.19	0.10	0.14	0.12
CS-1	0.48	n/a	n/a	0.61	0.50	74.50	n/a	n/a	75.15	59.15	2.68	n/a	n/a	2.40	2.87	0.21	n/a	n/a	0.10	.0.9
CS-2	0.73	1.11	1.02	1.24	1.63	54.95	51.70	68.43	60.00	76.33	2.76	3.18	3.93	3.11	2.50	0.08	0.21	0.21	0.52	0.19
Borrow	0.24	0.29	0.28	0.32	n/a	123.4	123.6	123.8	124.3	n/a	1.70	1.79	2.02	1.40	n/a	0.05	0.07	0.09	0.08	n/a
Native 1	0.47	0.45	0.51	0.74	n/a	122.3	124.0	124.7	122.4	n/a	1.06	0.48	0.44	0.42	n/a	0.06	0.10	0.28	0.34	n/a
Native 2	0.49	1.42	1.32	n/a	n/a	52.30	38.90	35.53	n/a	n/a	0.60	1.16	2.53	n/a	n/a	0.02	0.03	0.04	n/a	n/a

Note: Column identified by "8" was sampled at depths between 4 and 8 feet.

———As shown by the tabulated data representing the set of soil samples taken in 1994, and as expanded upon in Chapter 2, there is little acid potential for existing or reclaimed soils. The concern is then turned toward concentrations of boron and selenium. A discussion of potential impacts is discussed further in the following section.

7.28.3.3 Impacts by Mining or Reclamation

Sediment Yield from Disturbed Areas

——The impacts which could result from additional sediment contamination are decreased surface water quality in the Price River. The quality decrease would occur as increased TSS, TDS, and salt concentrations for downstream flows. Such impacts could reduce the usability of the flow for downstream irrigation and stockwatering.

——These impacts are controlled at the Price River Terminal permit area ~~Wellington loadout~~ through the use of adequately designed runoff control structures. As previously installed, the runoff control structures for the Price River Terminal facility~~loadout~~ capture and treat all runoff from disturbed lands before it is released to the Price River. A review of the runoff control plan and structures for the entire permit area was recently completed by Hansen, Allen & Luce, Inc. and is included within the permit in Sections 7.32, 7.33, 7.34, 7.42, and 7.43, and as shown on Drawing F9-177. The basic plan includes the diversion of all undisturbed areas away from disturbed areas and the collection and retention of all other areas into sediment ponds or alternate sediment control structures (ASCA's). Similarly, at the Covol coal fines wash plant, sediment and runoff was designed to be controlled by site grading, drainage ditches, and culverts. The main plant site pad will be graded at 2 percent, with all runoff directed to the Lower Refuse Basin sediment pond. Upgradient runoff will be directed around the pad with structures as described in Section 7.42. In addition, interim revegetation and erosion control matting will be place on the steep fill slopes associated with the column pad and the east side of the main pad area. The sediment ponds have been designed to contain runoff until effluent limitations are met, and runoff treated by ASCA's is limited to small areas which contain limited activity.

Sediment in storm water runoff from the SMCRA areas west of the Price River will be controlled through the use of ditches, sediment control ponds, and alternate sediment control structures. Storm water runoff from undisturbed areas will be diverted away from disturbed areas in ditches. Sediment in storm water runoff from the coarse refuse pile and the site of the previous coal pile in the SMCRA permitted area will be collected in ditches and directed to the Plant Sediment Pond for treatment prior to discharge to receiving waters. Treatment of sediment in runoff waters from other disturbed areas will be accomplished through the use of silt fences, erosion waddles and straw bales.

Additional sediment yield is not anticipated as a result of the reclamation activities involving removal of coal fines from the slurry ponds. The removal operations will take place within the existing slurry ponds, which will effectively isolate and contains the removal activities from surrounding surface water drainages. The physical removal of the fines from the facility will reduce the potential that these materials could contribute to increased sediment yield in the future.

Water Quality Impacts

——Overall impacts to water quality as a result of mining were identified in the discussion related to the spatial water quality time plots discussed in Section 7.28.2. According to information contained in the previous section, the acid base potential for materials found within the refuse ponds is low, and consequently little water quality impact is expected to occur as a result of acidity either during operations or during reclamation. Similarly, analyses of a washed tails sample (Appendix WT) from Covol's bench scale testing showed low acid base potential, and represents the expected acid base potential of replaced tails after Covol's processing. The reported results from EP toxicity tests on the in-place coal fines refuse deposited by U.S. Steel indicated that the material does not generate toxic leachate. Covol's initial bench scale test samples (Appendix WT and Appendix TW) indicate that the washed tails would not generate toxic leachate either. The leachate of the Covol tails was analyzed through standard soil paste extract procedures, which is a 24-hour leach with water. ~~Further, chemicals added to the tailings as a result of Covol's processing will be surfactants/flocculents which are used at low, environmentally benign, concentrations (See Appendix MS for the Material Safety Data Sheets for the reagents to be used).~~

Current water quality concentrations in both surface and ground water stations reflect conditions associated with a drier, drought type climate. Increased precipitation is credited for having created a diluting effect upon select ground water qualities including magnesium, sulfate, chloride, manganese and TDS between the years 1985 and 1986 after record high precipitation was recorded throughout the State. ~~(See figures included within Appendix 7.28-2)~~. Similar climatic impacts are noted to have occurred during these same years upon surface water quality parameters including magnesium, sulfate, chloride and TDS.

In contrast to recent diluting effects, there will be some mineral concentration in water in the Clearwater Pond through evaporation and other loses associated with the recycling of wash and dredge water. An analysis of this mineral concentration, using the operating plan water balance, indicates that a concentration of up to about 135 percent of the solids component of the make-up water concentration is possible. This should be acceptable given the large variability in TDS of the surface and groundwater in the area.

Additional information is provided herein which discusses the potential toxic impacts of refuse and slurry materials upon both surface and ground water conditions during current operations as well as during reclamation.

Present Conditions. Regardless of boron, selenium, or other concentrations, little effect could be realized directly upon surface water since the materials are currently contained within runoff control and slurry facilities. Because of the size of these ponds (having the capacity to hold in excess of two to three Probable Maximum Precipitation (PMP) events), little potential exists for any direct spillage into or direct affect upon natural downstream waters. Surface water influences would be confined to leaching of materials through the slurry ponds into the ground water environment and eventually into the downstream river.

Little to no impact to the ground water system in the Price River Terminal permit and adjacent area is anticipated for the following reasons:

Levels monitored at stations GW-1, GW-2, GW-3, and GW-14 (stations considered undisturbed or background) indicate concentrations equal to or significantly greater than concentrations which have been recorded at other stations. A prime example is that of TDS. Station GW-1 shows a normal TDS concentration of approximately 4,000 to 5,000 mg/L. Stations GW-2 and GW-3 on the other hand show much higher values ranging up to 170,000 mg/L. TDS at these lower downgradient stations (relative to the general ground water flow from north to south) is believed to be increasing due to a natural phenomenon related to regional irrigation, ground water flow and evaporation much the same way salts accumulate in the Great Salt Lake.

Evidence of this can be easily seen as a buildup of salts on the south facing bank of the Siaperas Ditch. It is believed that salts are concentrating at this location when local ground water, irrigation and runoff water (located in or near the north end of the Upper Refuse Basin) evaporate. Discussions related to the accumulation of salts can be found in several texts regarding irrigation and drainage. "Irrigation Principles and Practices – Fourth Edition" written by Vaughn E., Hansen, Orson W. Israelsen, and glen E. Stringham, 1979, state that "During periods between irrigation, a high water table favors the upward capillary flow of water to the land surface, where the water evaporates. The soluble salts carried by the upward-moving water cannot be evaporated, hence they are deposited on or near the soil surface. Salts so deposited may come from salty soil horizons well below the surface. The mere concentration at the surface of salts that are normally distributed through the upper few feet of soil may cause serious salinity." A review of water table conditions at GW-2 and GW-3 indicate that evapotranspiration in and around the Siaperas Ditch is the likely cause of elevated TDS concentrations at that location. Baseline concentrations of other parameters at the above mentioned stations are also generally equal to or higher than other routine stations.

No direct correlation between irrigation and TDS concentrations is possible since no irrigation has been conducted on the land immediately north of the Upper Refuse basin for some time, nor have irrigation records been kept regarding application rates and acreage. The general irrigation term used within the permit references a combination of subsurface flows being generated from the multiple upstream sources, one of which includes irrigation.

It is believed that historically, during periods of flood irrigation, the addition of water to the land immediately north of the Upper Refuse basin had a positive effect on overall water quality. This positive effect was the result of both a "flushing" of water through the soil matrix and a diluting of ground waters. When applied, flood irrigation water would have had the effect of not only diluting TDS concentrations, but also of moving salts through the soil matrix and out the Siaperas Ditch. When irrigation stopped, the overall ground water table dropped, and evapotranspiration began the local salt concentration process within the area of the Siaperas Ditch.

More recent chemical and water-level data from groundwaters at the Price River Terminal site has been submitted electronically to the Division's on-line water quality database.

It has been suggested that not one, but two generalized flow patterns may potentially exist beneath the upper refuse basin in the vicinity of the Siaperas Ditch. This first is the normal southerly flow which moves from the north fields, southward through the Upper and Lower Refuse Basins, and out through the Clearwater Pond. The second would exist when water were ponded in the Upper Refuse Basin and thereby feed a localized reversed gradient toward the Siaperas Ditch. The probability for this second flow scenario to form over a large area due to ponded water has been extremely remote for the following Reasons:

- All water drains from the Upper basin to the Lower basin through a set of culverts placed within the dike separating them, therefore no water is ponded locally sufficient to create a local reversal of gradient in the water table.
- The 10 Year, 24 Hour runoff event which accumulates in the Lower basin would reach a design elevation of 5374.5 feet. The average water table gradient between the high water mark and the Siaperas Ditch (approximately 2,100 feet to the north) would be about 0.0017 feet per foot. Sufficient time would not be available for the development of a reversed gradient given such a relatively short lived storm event.
- The same conclusions can be made regarding the 100 year, or PMF (Probable Maximum Flood) events with the exception that more time would be required to drain the event through the outlet works of each pond. If allowed to stabilize, the resulting "static" reversed gradient would be 0.005 feet per foot, which would not form in a reasonable amount of time. The validity of this statement can be verified by assuming that the maximum permeability for the alluvium of 0.031 feet/min (as given in Table 7.22-8) and the gradient of 0.5% as stated above. Using Darcy's velocity, v=ki, it would take over 22 years for water to reach the Siaperas Ditch. Although it is likely that the reversal in gradient would occur much quicker due to other factors such as soil pressures, non-homogeneous conditions, etc., the numerical example does illustrate that the formation time of such an event is substantial.

It is possible however, that localized variations in water table do exist, especially within the far northwestern portions of the Upper Refuse Basin. A review of the Upper basin embankment and channel cross section at station GW-3 shows that the Siaperas Ditch may receive water from the immediate area surrounding both the north and south sides of the ditch during high water table conditions. This flow, if and when it occurs, is created when the ditch acts as a drain to the localized water table. It is also acknowledged that if this flow condition were to occur for an extended period of time, that data from GW-3 would tend to represent water quality beneath the refuse basins, and not undisturbed areas to the north. No modifications have been made to Map E9-3451 to show this possible anomaly since the affected area is small and insufficient data exists to warrant modification of permit mapping.

It is therefore maintained that the overall ground water flow is from the north to the south with undisturbed waters generally being classified as stations GW-1 and GW-2 with GW-3 recording undisturbed water in low water table years.

~~However, with the additional water being ponded in the Upper Refuse Basin as part of Covol's dredging operations, the localized gradient reversal may be more predominant over the next few years. With this awareness, data from GW-3 will be particularly scrutinized.~~

- A comparison of stations GW-4, GW-5 and GW-6 to that of baseline stations shows that water quality at the natural outfall to the refuse basins and the Clearwater pond is either equal or superior to baseline water quality. If the slurry basins were producing poor quality water, these stations should be the first indicator. ~~All of these stations, except for GW-5, will continue to be monitored throughout the operation and reclamation of the CWP, so any consequent change in water quality will be observed and reported.~~ GW-5, which had been dry for several years, was abandoned, sealed, and reclaimed in November 1997. GW-15a, GW-15b, GW-16, and GW-17 were installed at that time, and are now part of the monitoring program.

- Operations ceased adding material and water to the slurry ponds in the early 1980's. The only water currently entering the ponds is through rainfall or natural runoff, neither of which contain high mineral contents which could potentially occur in slurry water. Water quality information for a sample of washed tails water obtained from a bench scale test, and results from a soil paste extraction analysis of the solid component of the waste from the bench scale test has been added to Appendix WT and Appendix TW, respectively. As shown, the washed tails water has a total dissolved solids content of 1,500 mg/l, reflecting the same general level of mineral content as the Price River source water.

- Decreased inflows experienced since operations ceased have translated to a decreased leaching potential of slurry materials.

Reclamation. Water quality impacts as they relate to reclamation activities, including the removal of coal fines from the slurry impoundments, will be minimal because runoff and sediment control will be designed and maintained to prevent surficial loading to the Price River. Should sediment control fail, water quality impacts include the potential for increased sediment loading to the Price River during the initial phases of reclamation disturbance, and by toxics including boron and selenium. As can be seen by the data presented in Table 7.28-7, boron exceeds the acceptable limit of 5 mg/l in at least one depth sample at all six SP Stations. As stated earlier within this chapter, as well as within Chapter 2, high boron concentrations can be of concern due to the potential limiting impact upon plant life. A discussion regarding successful plant growth on test plots wherein SP soils were used can be found within Chapter 2. The remaining question regarding the control of boron then relates to the potential for boron to leave the site via ground water migration and thereby impact neighboring vegetation systems. An evaluation of data found in Table 7.28-7 shows that all SP stations experience a decreasing concentration of boron with depth. This anomaly was explained in a personal communication in 1994 between Hansen, Allen & Luce, Inc. and Mt. Nebo Scientific as a natural occurrence resulting from evapotranspiration. The end result is that the most concentrated amounts of boron will be found within the upper most soil layers thereby limiting the potential for leaching into the ground water system. Because impoundment of water is not associated with the fines removal process, the potential for movement of selenium or boron through the floor of the slurry ponds is minimized.

Upon reclamation, it is proposed to create a roughened surface which will mostly contain and control rainfall runoff. Rainfall captured by this roughened surface will be mostly absorbed into the soil matrix and become available for the support of vegetative growth. During summer months, little rainfall contribution to the local ground water table is believed possible due to the typically high evapotranspiration rates documented in the "Hydrologic Atlas of Utah" prepared by the Utah Department of Natural Resources and Utah State University. (Although the summer months of July, August and September provide, on average, the highest rainfall amounts, much of this rainfall would be expected to evaporate and/or run off surficially.) The greatest potential for rainfall contribution to the ground water table would characteristically be in the winter between the months of November and March when evapotranspiration rates are at a minimum. Even during the winter months however recharge and leaching potentials will be hampered because of freezing conditions which will slow overall infiltration. Under either scenario, boron concentrations are expected to be similar in nature to those currently measured at monitoring stations in that concentrations decrease with depth. The end result is that little to no transport via either surface or ground water is expected to occur, and vegetation will continue to grow as documented in test plot studies.

Concentrations of selenium at first glance appear to be of major concern. At closer scrutiny however it is noted that values from one of the two native test pits were similarly found to be high indicating the natural presence of selenium. Since some background (undisturbed or native samples) levels have been found to be high, and since leaching of the soils is expected to be minimized by evapotranspiration during spring, summer and fall periods as discussed above, little impact is anticipated as a result of planned reclamation activities.

Impacts to water quality are not anticipated as a result of the reclamation activity of removing fines from the slurry ponds at the Price River Terminal. The fines removal will take place within the slurry ponds which will provide containment for any water which could come into contact with the coal fines during the removal process. The coal fines removal process is not associated with the impoundment of water in the slurry ponds. Accordingly, increases in the hydraulic head on groundwaters in the region (that could increase groundwater flow rates) are not anticipated.

Conditions during and after reclamation are also expected to decrease the potential for leaching because of the following:

- A large quantity of runoff water that currently enters the basins will be diverted through a permanent diversion ditch. This reduction of water will limit the amount of leaching possible to the amount of rainfall which falls directly on the respective basins.

- The land surface will be roughened to encourage and promote infiltration of rainfall. This localized capturing of the water is believed to be critical to the establishment of successful vegetation. As vegetation grows, additional water will be used within the upper soil layers to support the vegetation thereby reducing the total amount of leaching possible.

- A review of precipitation and evaporation records discussed earlier indicates that the annual amount of evapotranspiration significantly exceeds the amount of rainfall to the region.

Physical removal of coal fines in the slurry ponds from the property will permanently reduce the potential for leaching of any toxic substances from these coal fines.

Flooding or Streamflow Alteration

No streamflow alteration has occurred to the Price River which traverses through the middle of the permit area, nor has any hydrologic modification been made which would impact the flooding potential of the Price River. To the contrary, it is believed that the flooding potential within the disturbed areas of the permit has been reduced with the installation of surface impoundment structures as discussed previously. Because of a change in operation since 1984, many of the runoff control ponds have capacities far in excess of local requirements. Even with operation of the CWP, required capacities were maintained. Although this retention of water produced from precipitation at these areas will reduce the total amount of runoff which would normally enter the Price river in the absence of the loadout facility, the overall impact should be negligible because of the small amounts of rainfall runoff which would normally occur throughout the year in comparison of annual Price river flow volumes.

Pumping of up to 5 cfs of water from the river water collection well near the Price River and/or the rivers diversion to the river pumphouse would likely to have a similar level of impact on river flows as during U.S. Steel's former operations.

The removal of coal fines from the slurry ponds as part of the reclamation activities at the Price River Terminal will not increase the potential for flooding or streamflow alteration. The coal fines removal activities will occur within the containment of the slurry basins and the removal process. The coal fines removal process is not associated with the impoundment of water in the slurry ponds.

Ground-Water and Surface-Water Availability

Probable hydrologic impacts upon surface and ground water availability will be related to use of up to 5 cfs of water from the Price River. This water has previously been appropriated for use at the site, and its use will continue to be overseen by the State Engineer's office to insure that it will not negatively affect other water right holders. According to information provided earlier it also appears that the local ground water basin was being benefitted by previous operations through the dilution of the highly saline local waters. Since the operations have ceased which caused this dilution, the ground water appears to have returned, or is returning to background or natural levels. Additional information related to water quality conditions or trends can be found in Sections 7.24 and 7.28.2.

Since 1) water quality variations resulting from the facility are believed negligible, 2) neither surface or ground water is used for domestic purposes, and 3) ground water levels appear unimpacted by surface operations, little or no impact upon local domestic, agricultural, or industrial systems is anticipated.

Adequacy of Existing Monitoring Plan

It is believed by the applicant that the current water quality monitoring plan is adequate to define and document current, and monitor future impacts to the surrounding surface and ground water systems with modifications noted below.

As part of the monitoring plan, samples of ground water and surface water have been collected at sites GW-4, GW-6, SW-4, and SW-5 for analysis of BTEX-N and propylene glycol. The BTEX-N monitoring at these sites began in the third quarter of 1998 and ~~has~~ continued through the third quarter of 2012. These parameters were analyzed to monitor for the potential presence of these substances in ground waters and surface waters at the site resulting from the use of additives in Covol's wash plant operations. At the time the BTEX-N and propylene glycol monitoring was first recommended, it was considered unlikely that these constituents would be detected in the monitoring wells. These compounds were never detected in significant concentrations and these compounds have not been used at the facility since Covol's operations ceased in 1999. Accordingly, the monitoring of BTEX-N and propylene glycol at these monitoring stations is no longer included in the monitoring plan.

Upon a previous review of the hydrologic monitoring data conducted in the 1990s, some unexplained variation in water quality results were ~~have been~~ noted and some potential errors in sampling, reporting and/or analyzing were ~~have been~~ documented historically. Plans to improve the water quality monitoring program were proposed at that time that included additional on-site education of persons responsible for collecting the appropriate samples, the collection of boron and selenium samples at each ground water site, a review of the track record and capabilities of the analytical laboratory, the installation of two new wells to replace existing wells GW-2 and GW-5 and, the "same day" collection of water samples.

The collection of "same day" water samples is especially critical at surface stations SW-1, SW-2, SW-4 since the time of travel between stations is measured in minutes rather than days, weeks or months as it is in ground water situations. It is believed however by the Operator that the interaction between surface and ground water sources is sufficiently slow that collection of "same day" ground water samples is not warranted. However, at the request of DOGM, and to increase efficiency, the Operator will attempt to collect samples at stations SW-1, SW-2a, and SW-4 on the same day.

Monitoring at site GW-12 is being removed from the monitoring plan. The reasons for the removal are discussed below. GW-12 is located west of the Price River near the historic location of the surface facilities. Currently there are no operational activities at the historic surface facilities area. Well GW-12 is situated between two nearby monitoring wells (GW-7 and GW-14) which are also located west of the Price River and east of the railroad tracks. Because of their close proximity, these two wells can adequately monitor for potential impacts to groundwater systems in the area. Additionally, the region at and immediately surrounding the well location is frequently flooded with surface water runoff from adjacent irrigated farm lands. The ponding of irrigation water at the well location has influenced both water levels and groundwater chemical compositions at the well. These factors limit the usefulness of water level and chemical information collected at the well.

Laboratory pH and Laboratory specific conductance measurements were previously ~~are being~~ removed from the list of laboratory analytical parameters in the monitoring plan for both groundwaters and surface waters. Field pH and field specific conductance measurements are currently included in the monitoring plan for ground waters and surface waters. The field measurements are performed using industry standard field instruments which are regularly calibrated using traceable NIST standard reference material. The results of the field measurements are believed to be reliable and accurate. Accordingly, there is no need to perform redundant pH and specific conductance measurements at the laboratory.

Currently, no diversions of water from the Price River or discharges of water to the Price River at the facility area are occurring. The likely magnitude of potential contributions (or losses) of flow to the Price River resulting from current activities at the facility is small, and is likely less than the typical error in the flow measurement technique used at SW-2 (current velocity meter and wading rod). The typical measurement error using the alternate "float" method is much greater. Historically there was infrastructure at SW-2 which included an access bridge and cement weir to facilitate accurate discharge measurements at the site. However, at the request of the Division, the access bridge was removed and the stream channel geometry at the cement weir has changed substantially due to erosion of the stream banks at the weir location. As a result of the erosion, poor conditions for stream discharge measurement are now present at the site. Complicating the collection of accurate flow data, water now flows diagonally over substantial portions of the weir rather than in a laminar condition parallel to the channel direction as occurred previously. Additionally, in recent years considerable thicknesses of sticky mud have been deposited along the stream banks and on the channel bottom which makes wading of the stream unsafe. Surface water discharge rates will continue to be monitored at station SW-2 as specified in the monitoring plan. To increase the safety of monitoring personnel, prudent measures will be taken to minimize safety risks where necessary. These may include the use of a safety rope, using personal flotation devices, and the use of anti-slip footwear. As described in this document, under some conditions when access to the river is considered unsafe, flow measurements in the stream may be performed using the "float" method to minimize the danger to monitoring personnel. When the stream is deemed inaccessible (such as when the creek is ice-covered) no measurement will be performed and this condition will be reported to the Division.

Monitoring of water quality in the Price River, both above and below the facility area, will continue as currently detailed in the surface water monitoring plan.

In conjunction with a change in the post-mining land use at the Price River Terminal facility, substantial portions of the previously SMCRA permitted area are now designated as industrial areas. The industrial area is not included in the SMCRA permitted area (see map E9-3343(1)). Coal mining and reclamation activities no longer occur within the industrial areas at the Price River Terminal facility. Remaining SMCRA permitted areas west of the Price River include the area of the coarse refuse pile, the footprint of the former coal stockpile area, and areas designated for use as soil borrow areas for future reclamation activities at the facility (Map E9-3343(1)). Remaining SMCRA permitted areas east of the Price River include water ponds, slurry ponds and adjacent areas.

Groundwater and surface water quality in the industrial areas is regulated by the Utah Department of Environmental Quality/Division of Water Quality. Groundwater and surface-water usage and rights are regulated by the Utah Division of Water Rights. Accordingly, monitoring sites GW-9b, GW-10, GW-13, and GW-14 are being removed from the hydrologic monitoring plan. These wells are located in the industrial area at the Price River Terminal facility that is not under SMCRA permit. These monitoring wells are no longer needed for monitoring of potential impacts to groundwater quantity and quality associated with mining- and reclamation-related activities at the facility. Residual impacts to groundwater quantity or quality in these areas that could be attributed to previously occurring mining- and reclamation-related activities at the site have not been identified, nor are any future impacts that could occur as a result of previously occurring mining and reclamation activities anticipated.

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7.29 CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA) (R645614-301-729)

To be submitted by the Division.

7.29 CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (R614-301-7290)

The Division will prepare the Cumulative Hydrologic Impact Assessment (CHIA). Reports discussing probable hydrologic consequences (PHC's) are in Appendix I, and Section 7.28. The operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

7.30 OPERATION PLAN (~~R614~~R645-301-730)

7.31 GENERAL REQUIREMENTS (~~R614~~R645-301-731)

Local hydrologic and geologic conditions are described in Appendix I and Section 7.28. Disturbance to the hydrologic balance within the permit and adjacent areas will be minimized by disturbing only areas which are necessary ~~for coal processing and loading operations~~ and by promptly revegetating, mulching or otherwise treating areas which are no longer needed for operations. Material damage will be prevented outside the permit area by controlling runoff and erosion from within the permit area. Hydrologic structures, including ponds, ditches and berms are employed to control erosion, control drainage, and prevent discharge of water from the site until effluent standards are met. No other water treatment facilities are employed. Designs for these structures can be found in section 5.31 and in appendices referenced. Secad+ designs for structures are found in Vol. II, Hydrology Appendix. Original design information is found in Appendices A and B. These structures will be retained through the post-mining monitoring period as needed to ensure that water leaving the site meets water quality standards.

No acid- or toxic-forming materials are generated on site. Any hazardous materials will be stored and disposed of so as to prevent degradation of soils or water, as described in Section 5.28 (528.330 – 528.350). Potential sources of contamination to surface and ground-water exist via the refuse piles, plant water ponds and slurry ponds. A description of the hydrologic consequences of these facilities occurs in Appendix I. It was previously concluded that the Wellington Preparation Plant would have negligible impacts to the Price River. A ground-water monitoring plan was implemented to ensure that this conclusion was correct. The plan has been modified since Appendix I was written. The current plan is contained in Section 7.31 (731.200).

7.31.100 – 731.122

Groundwater quality will be protected by handling earth materials and runoff in a manner that minimizes acidic, toxic or other harmful infiltration to ground-water systems and by managing excavations and other disturbances to prevent or control the discharge of pollutants into the ground-water. The reclamation activity of removing coal fines from the slurry ponds will be managed to prevent or control the discharge of pollutants into the ground water.

Surface-water quality will be protected by handling earth materials, groundwater discharges, the removal of coal fines from the slurry ponds, and runoff in a manner that minimizes the formation of acidic or toxic drainage and prevents, to the extent possible, using the best technology currently available, additional contributions of suspended solids to streamflow outside the permit area, and otherwise prevents water pollution.

If drainage control, restabilization and revegetation of disturbed areas, diversion of runoff, mulching or other reclamation and remedial practices are not adequate, the operator will use and maintain the necessary water treatment facilities or water quality controls.

~~Surface-water quality and flow rates will be protected by~~

7.31.2. WATER MONITORING

The monitoring plan for groundwaters and surface waters is described in Tables 7.31.2-1, 7.31.2-2, 7.31.2-4, 7.31.2-5 and 7.31.2-6. Groundwater and surface water monitoring stations are shown on Map E9-3451. The locations of UPDES monitoring stations and the locations of historic monitoring sites are also shown on Map E9-3451.

Recommended procedures and guidelines for water sampling is attached to this MRP as Appendix 7.31-1. Results of the water monitoring program will be submitted on a quarterly basis to the Division's electronic water quality database.

The water monitoring plan has been designed to verify that impacts to the hydrologic balance do not occur as a result of mining and reclamation activities at the Price River Terminal permit area. The monitoring plan may be used to detect potential impacts by comparing the results of baseline water monitoring activities with current water monitoring data. In such an evaluation, other important factors that should be considered include climatic variability and land use and management practices.

~~Ground and surface water monitoring are described below. Field measurements collected for both surface and ground water stations are collected with the aid of meters, except for dissolved oxygen which is monitored by use of either a meter or a field test kit using chemicals~~.

~~It has been noted that there have been some historic problems with data sampling which the operator desires to resolve. As a solution the Operator agrees that~~ Flows monitored as part of the surface water monitoring program will be measured and not listed as "greater or lesser than" unless measurement is not practically possible or if the performance of such a measurement might present ~~due to~~ a hazard to life.~~., and that~~ Copies of field data collection sheets will be submitted to the Division upon request.

7.31.21. GROUND WATER MONITORING

A ground water monitoring plan, based upon the PHC determination, as described in Appendix I and Section 7.28, and baseline hydrologic and geologic information has been developed. The monitoring of groundwaters at the Price River Terminal is carried out as specified in Tables 7.31.2-1, 7.31.2-2, 7.31.3-3, and 7.31.2-5. ~~Prior to 1996, fourteen wells were monitored quarterly for the parameters of Operational Monitoring in Table 3 of the Division's Guidelines for Establishment of Surface and Ground Water Monitoring Programs for Coal Mining and Reclamation Operations. In May 1996, a proposal was submitted to the Division to request the elimination of quality monitoring from site GW-2, total elimination of site GW-5, and the addition of two new well sites, GW-15 and GW-16.~~ Groundwater monitoring site locations are shown on ~~Dwg.~~Map E9-3451.

~~Well GW-2 will continue to collect water level data.~~

~~In November 1997, wells GW-15A, GW-15B, GW-16 and GW-17 were installed and added to the monitoring plan. Their locations are shown on DWG. E9-3451A. GW-15a and GW-15b will monitor undisturbed water in the coal fines. Permeability tests will be conducted on each of these wells prior to February 1, 1998, and results will be reported to the Division.~~

Table 7.31.2-1 Hydrologic monitoring protocols for Wellington Prep Plant water monitoring stations.

	Water Level/Flow	Water Quality
Wells – East side of Price River		
GW-1	1	A, C
GW-2	1	--
GW-3	1	A, C
GW-4	1	A, C
GW-6	1	A, C
GW-15a	1	A, C
GW-15b	1	A, C
GW-16	1	A, C
GW-17	1	A, C
Surface Water – East side of Price River		
SW-1	2	B, D
SW-2	2	--
SW-2a	--	B, D
SW-3	2	B, D
SW-4	2	B, D
SW-5	2	B, D
SW-6	2	B, D
SW-7	2	B, D
Wells – West side of Price River		
GW-7	1	A, C
GW-8	1	A, C
GW-9	1	A, C
~~GW-9b~~	~~1~~	~~A, C~~
~~GW-10~~	~~1~~	~~A, C~~
~~GW-13~~	~~1~~	~~A, C~~
~~GW-14~~	~~1~~	~~A, C~~
~~**Surface Water – West side of Price River**~~		
~~SW-8~~	~~2~~	~~B,D~~

Table 7.31.2-2 Hydrologic monitoring protocols.

Water Level/Flow

1 Monitoring well: quarterly water level measurement when site is reasonably accessible.

2 Surface water monitoring sites: Quarterly discharge measurement when site is reasonably accessible. Site will not be physically accessed when high flows, mud, or ice is present that presents a danger to health and safety. Under such conditions, an attempt will be made to perform a discharge measurement using a technique that does not jeopardize health and safety. When the stream is ice-covered, it is usually not possible to perform a discharge measurement.

Water Quality

A Monitoring well: quarterly field and laboratory water-quality measurements as specified in Table 7.31.2-3 when site is reasonably accessible.

B Surface water: quarterly field and laboratory water-quality measurements as specified in Table 7.31.2-4 when site is reasonably accessible.

C Monitoring well: field and laboratory water-quality measurements for baseline parameters as specified in Table 7.31.2-5 during the second or third quarter monitoring event every five (5) years in the year prior to permit renewal when the site is reasonably accessible. Scheduled future baseline monitoring events are for 2019, 2024, 2029, etc.

D Surface water: field and laboratory water quality measurements for baseline parameters as specified in Table 7.31.2-6 during the second or third quarter monitoring event every five (5) years in the year prior to permit renewal when the site is reasonably accessible. Scheduled future baseline monitoring events are for 2019, 2024, 2029, etc.

Table 7.31.2-3 Groundwater operational and reclamation phase water-quality monitoring parameters.

FIELD MEASUREMENTS	**REPORTED AS**
pH	pH units
Specific Conductivity	µS/cm @ 25°C
Temperature	°C
LABORATORY MEASUREMENTS	
Calcium (dissolved)	mg/L
Magnesium (dissolved)	mg/L
Sodium (dissolved)	mg/L
Potassium (dissolved)	mg/L
Bicarbonate	mg/L
Carbonate	mg/L
Sulfate	mg/L
Chloride	mg/L
Boron (total)	mg/L
Boron (dissolved)	mg/L
Iron (total)	mg/L
Iron (dissolved)	mg/L
Lead (dissolved)	Mg/L
Manganese (total)	mg/L
Manganese (dissolved)	mg/L
Selenium (total)	mg/L
Selenium (dissolved)	mg/L
Total Dissolved Solids (TDS)	mg/L
Total Alkalinity	mg/L
Total Hardness	mg/L
Cation/Anion Balance	%

Table 7.31.2-4 Surface water operational and reclamation phase water-quality monitoring parameters.

FIELD MEASUREMENTS	REPORTED AS
pH	pH units
Specific Conductivity	µS/cm @ 25°C
Temperature	°C
LABORATORY MEASUREMENTS	
Calcium (dissolved)	mg/L
Magnesium (dissolved)	mg/L
Sodium (dissolved)	mg/L
Potassium (dissolved)	mg/L
Bicarbonate	mg/L
Carbonate	mg/L
Sulfate	mg/L
Chloride	mg/L
Boron (total)	mg/L
Boron (dissolved)	mg/L
Iron (total)	mg/L
Iron (dissolved)	mg/L
Manganese (total)	mg/L
Manganese (dissolved)	mg/L
Selenium (total)	mg/L
Selenium (dissolved)	mg/L
Total Dissolved Solids (TDS)	mg/L
Total Suspended Solids (TSS)	mg/L
Total Settleable Solids	mg/L
Total Alkalinity	mg/L
Total Hardness	mg/L
Cation/Anion Balance	%
Oil and Grease	mg/L

Table 7.31.2-5 Groundwater baseline water-quality monitoring parameters.

FIELD MEASUREMENTS	REPORTED AS
pH	pH units
Specific Conductivity	µS/cm @ 25°C
Temperature	°C
LABORATORY MEASUREMENTS	
Calcium (dissolved)	mg/L
Magnesium (dissolved)	mg/L
Sodium (dissolved)	mg/L
Potassium (dissolved)	mg/L
Bicarbonate	mg/L
Carbonate	mg/L
Sulfate	mg/L
Chloride	mg/L
Boron (total)	mg/L
Boron (dissolved)	mg/L
Iron (total)	mg/L
Iron (dissolved)	mg/L
Lead (dissolved)	Mg/L
Manganese (total)	mg/L
Manganese (dissolved)	mg/L
Selenium (total)	mg/L
Selenium (dissolved)	mg/L
Total Dissolved Solids (TDS)	mg/L
Total Alkalinity	mg/L
Total Hardness	mg/L
Cation/Anion Balance	%
Ammonia	mg/L
Aluminum (dissolved)	mg/L
Arsenic (dissolved)	mg/L
Cadmium (dissolved)	mg/L
Copper (dissolved)	mg/L
Molybdenum (dissolved)	mg/L
Nitrate	mg/L
Nitrite	mg/L
Oil and Grease	mg/L
Phosphate (ortho)	mg/L
Zinc (dissolved)	mg/L

Table 7.31.2-6 Surface water baseline water-quality monitoring parameters.

FIELD MEASUREMENTS	REPORTED AS
pH	pH units
Specific Conductivity	µS/cm @ 25°C
Temperature	°C
LABORATORY MEASUREMENTS	
Calcium (dissolved)	mg/L
Magnesium (dissolved)	mg/L
Sodium (dissolved)	mg/L
Potassium (dissolved)	mg/L
Bicarbonate	mg/L
Carbonate	mg/L
Sulfate	mg/L
Chloride	mg/L
Boron (total)	mg/L
Boron (dissolved)	mg/L
Iron (total)	mg/L
Iron (dissolved)	mg/L
Manganese (total)	mg/L
Manganese (dissolved)	mg/L
Selenium (total)	mg/L
Selenium (dissolved)	mg/L
Total Dissolved Solids (TDS)	mg/L
Total Suspended Solids (TSS)	mg/L
Total Settleable Solids	mg/L
Total Alkalinity	mg/L
Total Hardness	mg/L
Cation/Anion Balance	%
Oil and Grease	mg/L
Ammonia (NH_3)	mg/L
Aluminum (dissolved)	mg/L
Arsenic (dissolved)	mg/L
Cadmium (total)	mg/L
Copper (total)	mg/L
Lead (total)	mg/L
Molybdenum (total)	mg/L
Nitrate	mg/L
Phosphate (ortho)	mg/L
Zinc (dissolved)	mg/L

~~For reasons discussed in Section 645-301-728, monitoring well GW-12 is being removed from the groundwater monitoring plan.~~

~~For reasons discussed in Section 645-301-728, laboratory pH and laboratory specific conductance are being removed from the groundwater monitoring plan.~~

~~For reasons discussed in Section 645-301-728, BTEX-N and propylene glycol are being removed as laboratory parameter for monitoring wells MW-4 and MW-6.~~

Groundwater monitoring stations in designated industrial areas at the Price River Terminal facility that are no longer useful for monitoring of potential impacts related to mining and reclamation activities within the SMCRA permitted areas at the Price River Terminal have been removed from the hydrologic monitoring plan. These include monitoring stations GW-9b, GW-10, GW-13, and GW-14. The hydrologic monitoring plan for groundwaters and surface waters in the region east of the Price River remain unchanged.

It is not intended to include the Track Hopper within the water monitoring program because it is felt that it is not currently, nor will it ever be representative of local ground water conditions. The reasons for this conclusion are as follows:

- The track hopper is a large concrete structure which was constructed partially below local ground water level as required by design. Through the years water has seeped into the building either through the concrete itself, cracks and/or joints due to the locally high ground water table. It was never intended to be used as a water monitoring location.
- Although natural ground water gradients exist within the area, water will not likely move through the track hopper and contribute to either local flow conditions nor water quality variations. There is very little potential for contribution or impact to the exterior water regime because the track hopper it a sink, not a source of water. Water has entered the building because of a difference in head between the exterior and interior of the building. There is no source of water within the building which can drive a reverse gradient from the building. As water evaporates from the building interior, the water level decreases slightly thereby creating the head variation required for the inflow of additional local ground water.
- Continued inflow of water into the track hopper building, and the continued evaporation from its water surface is assuredly resulting in the continued concentration of water quality constituents. A blaring example of the resulting effects of this natural phenomenon is in the Great Salt Lake where concentrations of constituents have been accumulating for centuries.

Because of the above mentioned reasons the track hopper building will not become a part of the water monitoring program. Water quality parameters and data obtained from such a site would not be characteristic of local conditions and would therefore be invalid. However, to help alleviate concern regarding the quality of water within the building, a full baseline water quality sample has been taken for analysis and comparison with other ground water stations within the permit boundary. The complete results of the baseline water quality sample taken in the Track Hopper on April 30, 1994 are presented within Table 7.31.21-1.

Table 7.31.21-1 TRACK HOPPER BASELINE PARAMETERS TESTED

PARAMETER	RESULT	MDL	UNITS	PARAMETER	RESULT	MDL	UNITS
Alkalinity, Bicarbonate	599	1	mg/L	Magnesium, Total	810	1	mg/L
Alkalinity, Carbonate	<1	1	mg/L	Manganese, Total	1.4	0.1	mg/L
Alkalinity, Total	495	1	mg/L	Manganese, Diss	1.4	0.1	mg/L
Aluminum, Diss	<2	2	mg/L	Molybdenum, Diss	<0.2	0.2	mg/L
Anions	196.6	—	meq/L	Nitrogen, Ammonia	<0.4	0.4	mg/L
Arsenic, Diss	<0.01	0.01	mg/L	Nitrogen, Nitrate-Nitrite	0.1	0.1	mg/L
Boron, Diss	0.8	0.1	mg/L	Nitrogen, Nitrite	<0.01	0.01	mg/L
Cadmium, Diss	0.03	0.02	mg/L	pH	7.91	—	mg/L
Calcium, Diss	323	1	mg/L	Phosphorous, Ortho-PO4	<0.02	0.02	mg/L
Cations	215.9	—	meq/L	Potassium, Total	17	2	mg/L
Chloride	715	1	mg/L	Selenium, Diss	<0.01	0.01	mg/L
Conductivity	15260	1	mg/L	Sodium, Total	3060	1	mg/L
Copper, Diss	<0.2	0.2	mg/L	TDS	14404	10	mg/L
Hardness, Total	4142	1	mg/L	Sulfate	8000	01	mg/L
Iron, Total	0.5	0.2	mg/L	Zinc, Diss	0.80	0.03	mg/L
Iron, Diss	<0.2	0.2	mg/L	Cation/Anion Balance	4.70	—	%
Lead, Diss	<0.2	0.2	mg/L	Oil & Grease	<5	5	mg/L

~~The water found within the Track Hopper is a sodium-sulfate type water. The data collected shows nothing strikingly out of order from that which would be expected from the area. Values for conductivity, hardness and TDS are all elevated as expected, whereas baseline parameters such as arsenic, boron, cadmium, copper, selenium, and zinc all show low levels.~~

~~A summary of selected comparisons made with all monitoring stations is provided in Table 7.31.21-2 and a computer spreadsheet from which the table was generated can be found in Appendix 7.31-2. As can be seen from data provided, none of the parameters identified within the Track Hopper exceed those maximum values monitored at other ground water sampling locations. The only value which exceeds historic data is that for average pH. The amount of the average pH exceedance was 5%.~~

TABLE 7.31.21-2 COMPARISON OF TRACK HOPPER WATER QUALITY
WITH ALL GROUND WATER MONITORING STATIONS

PARAMETER	UNIT	TRACK HOPPER	AVERAGE ALL STA.S	COMMENT	MAXIMUM ALL STA.S	COMMENT
Ca	mg/L	323	1,233	OK	14,000	OK
Mg	mg/L	810	3,049	OK	8,630	OK
Na	mg/L	3060	23,493	OK	50,900	OK
K	mg/L	17	72.5	OK	218	OK
HCO3	mg/L	599	1,182	OK	6,800	OK
SO4	mg/L	8000	59,846	OK	122,000	OK
Cl	mg/L	715	2,931	OK	5,600	OK
pH	mg/L	7.91	7.5	Exceeds Historic	9.65	OK
Fe	mg/L	0.5	83.4	OK	650	OK
Mn	mg/L	1.4	3.26	OK	4.54	OK
TDS	mg/L	14,404	87,841	OK	184,400	OK

To investigate further how the water quality of the Track Hopper correlates with more localized data, a comparison was made between the recently collected data and that previously recorded for Stations GW-1, GW-7, GW-13, and GW-14. A summary of data for these stations is provided in Table 7.31.21-3. Note again in the table that none of the water quality parameters analyzed for the Track Hopper exceed those maximum values previously recorded for any of the local monitoring stations shown.

TABLE 7.31.21-3 COMPARISON OF TRACK HOPPER WATER QUALITY
WITH SELECTED GROUND WATER MONITORING STATIONS

PARAMETER	UNIT	TRACK HOPPER	AVERAGE OF STA.S	COMMENT	MAXIMUM OF STA.S	COMMENT
Ca	mg/L	323	412	OK	1,300	OK
Mg	mg/L	810	590	Exceeds Historic	967	OK
Na	mg/L	3060	3,701	OK	5,330	OK
K	mg/L	17	30.6	OK	39.7	OK
HCO3	mg/L	599	1,139	OK	6,800	OK
SO4	mg/L	8000	9,511	OK	11,400	OK
Cl	mg/L	715	468	Exceeds Historic	1,620	OK
pH	---	7.91	7.5	Exceeds Historic	9.65	OK
Fe	mg/L	0.5	52.8	OK	650	OK
Mn	mg/L	1.4	0.51	Exceeds Historic	3.5	OK
TDS	mg/L	14,404	15,906	OK	17,728	OK

Analytical results from each quarterly sample will be submitted to the Division. If the analysis of any ground water sample indicates noncompliance with permit conditions, the operator will promptly notify the Division and immediately take action as required to bring the effluent into compliance. Ground water monitoring will proceed through mining and continue during reclamation until bond release, or until it is demonstrated that disturbance to the prevailing hydrologic balance in the permit and adjacent areas

————Equipment, structures and other devices used in conjunction with monitoring the quality and quantity of ground water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator when no longer needed.

Monitoring well construction information for existing and previously existing monitoring wells in the Price River Terminal area is presented in Table 7.31.21.-4.

~~Water quality sampling procedures include the bailing of at least 3 casing volumes of water prior to sample collection. Water level measurements are taken using a datum located at the top of casing. Other recommendations for sampling include:~~

~~————A minimum of three to four well casing volumes of water should be removed from each well prior to the collection of a water sample. The number of bailer volumes to remove should be calculated during each visit unless the monitored water level is close to the water l eves found to exist on the previous visit. Table 7.31.21-4 shows the ground and collar elevations, total depth and volume of water found within each well on March 24, 1992. Tabulated depth and volume of water shown for GW-15a, GW-15b, GW-16, and GW-17 is for conditions reported soon after those well' installation in November 1997.~~

Table 7.31.21-4
Selected Well Information

Nell No.+	Ground Elevation (ft msl)	Collar Height (ft)	Collar Elevation (ft msl)	Total Depth (ft)	Water Level (ft)	Well Volume (ft3)	Well Volume (gal)
GW-1	5380.5	2.30	5382.8	21.8	15.1	0.58	4.3
GW-2	5388.8	1.45	5390.2	31.0	28.7	0.20	1.5
GW-3	5388.5	2.30	5390.8	22.8	19.80	0.26	1.9
GW-4	5340.8	2.28	5343.1	32.2	8.60	2.06	15.4
GW-5	5365.1	n/a	5365.1	22.5	Dry	---	---
GW-6	5334.3	2.30	5336.6	36.0	7.54	2.48	18.6
GW-7	5333.0	2.80	5335.8	38.3	11.15	2.37	17.7
GW-8	5348.2	1.92	5350.1	58.5	27.37	2.72	20.4
GW-9	5335.2	6.05	5341.2	36.7	15.56	1.85	13.8
GW-9B	5341.5	n/a	5341.5	47.1	13.78	0.73	5.5
GW-10	5338.4	1.66	5340.1	37.2	11.90	2.21	16.5
GW-11	5336.7	1.80	5338.5	42.8	9.37	2.92	21.8
GW-12	5333.8	2.32	5336.1	26.8	24.55	0.20	1.5
GW-13	5354.1	1.80	5355.9	45.4	12.50	2.87	21.5
GW-14	5339.4	2.18	5341.6	24.2	15.15	0.79	5.9
GW-15a	5378.5	3.0	5381.5	14.2	6.42	0.23	1.8
GW-15b	5378.5	3.0	5381.5	26.10	5.74	0.51	3.8
GW-16	5383.0	3.0	5386.0	69.25	41.59	0.67	5.0
GW-17	5369.5	3.0	5372.5	24.30	20.90	0.14	1.0

+ All wells are 4" diameter except for Wells GW-9B, GW-15a, GW-15b, GW-16, and GW-17, which are 2" diameter wells.

- Bailing resulting in increasingly turbid samples should be allowed to sit overnight before collecting a sample. This time delay will allow the disturbed sediments not characteristic of wells to re-settle before a valid sample is taken.
- When required and when practical, samples requiring filtering should be filtered in the field. When field filtering is not practical or possible, the laboratory will perform the filtering required. However, samples which are allowed to sit before being filtered are not truly representative of site conditions.
- A pump could be obtained for use in the collection of well samples without bailing. A low discharge pump will typically result in less turbulence and reduce the amount of sediment put into solution. At some well locations this may also result in the ability to collect the sample at the time of pumping rather than waiting until the following day.

Quarterly ground water monitoring is conducted at 14 wells (GW-1 through GW-14). A list of parameters analyzed was given previously in Table 7.24-2. Baseline parameters will be collected the year prior to the five year permit renewal. (2014, 2019, 2014, etc).

No modifications to the ground water quality monitoring plan are proposed to be implemented at the time of reclamation. A review of both operational and reclamation mapping appears to indicate that little if any disturbance of current ground water monitoring locations will be required. Should recontouring operations demonstrate that the ground surface adjacent to current monitoring locations be either significantly cut or filled, then the wells will be cut or extended as required to maintain the monitoring station.

7.31.22. SURFACE WATER MONITORING

A surface water monitoring plan, based upon the PHC determination, as described in Appendix I and Section 7.28, and baseline hydrologic and geologic information has been developed. All eight (8) surface water monitoring sites are monitored quarterly for the parameters of Operational Monitoring in Tables 7.31.2-1, 7.31.2-2, 7.31.2-4 and 7.31.2-6. 1 of the Division's Guidelines for Establishment of Surface and Ground Water Monitoring Programs for Coal Mining and Reclamation Operations. Monitoring at any UPDES point discharge location will comply with the Utah Division of Water Quality Utah Pollution Discharge Elimination System (UPDES) permits. Utah Division of Environmental Health and National Pollution Discharge Elimination System (NPDES) permits. Monitoring site locations (including UPDES sites) are shown on Dwg. E9-3451.

Analytical results from each quarterly sample will be submitted to the Division. If the analysis of any UPDES surface water sample indicates noncompliance with permit conditions, the operator will promptly notify the Division and immediately take action as required to bring the effluent into compliance. Surface water monitoring will proceed through mining and continue during reclamation until bond release, or until it is demonstrated that disturbance to the prevailing hydrologic balance in the permit and adjacent areas has been minimized and material damage to the hydrologic balance outside the permit area has been prevented, and water quantity and quality are suitable to support the approved post-mining land use, in accordance with Division Guidelines for post-mining monitoring.

Equipment, structures and other devices used in conjunction with monitoring the quality and quantity of surface water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator when no longer needed. Overall surface water sampling guidelines which may improve the quality of water samples being taken include:

- Surface water samples should generally be collected in a well-mixed portion of the stream above the weir by submerging the sample bottle with the opening pointed upstream. It is important not to disturb bottom sediments while taking these samples. The bottle however must be removed immediately upon filling so as not to dilute any fixing agent which may have been placed in the bottle by the chemical laboratory.

- Oil and grease samples should be collected by submerging only a portion of the bottle opening beneath the water surface. Since oil and grease rise to the surface, distorted samples can be collected by totally submerging the opening of the sample bottle.

When hazardous site conditions are present, discharge measurements in streams may be performed using the "float" method. ~~Water flow measurements taken at the majority of all surface water stations include the implementation of the "float" method for estimating flow rates.~~ This method approximates the channel width and depth, then records the time it takes a stick or other floating material to pass between two points a known distance apart. The total estimate is then reduced to approximately 70% of the calculated value to adjust for naturally occurring velocity gradients with channel depth. ~~The only measuring device wherein the flow is recorded is at the concrete weir located at the river pump house. Flow recorded at this point is used for recording flow at station SW-2.~~

As required by the regulations surface water monitoring will be completed quarterly for all surface water stations. ~~Historic monitoring has included monthly monitoring at Station SW-3 and semi-annual monitoring at stations SW-1, SW-2, SW-4, SW-5, SW-6, SW-7, and SW-8. In addition, attempts will be made to collect water quality samples during local precipitation events from the silt fence and straw bale area near surface water station SW-4 when practical and feasible. These samples will be taken when adequate flow exists to collect a representative sample without the introduction of additional sediments or contaminants throughout the sampling process. A list of surface water sampling parameters was given previously in Table 7.24-5.~~ Baseline parameters will be collected the year preceding five year permit renewal. (2014, 2019, 2024, etc.).

The reclamation plan which has been submitted for surface water runoff and conveyance includes the installation of two drainage diversion ditches or channels upstream of the Upper and Lower Refuse ponds as described within Section 7.60. The long term value of these two permanent channels is to 1) divert surface water runoff away from the refuse ponds thereby reducing the amount of materials which could possibly be leached from soils found within the ponds, and 2) to contain, control, and reduce the amount of potential erosion from vegetated pond surfaces.

A slight modification of the water quality monitoring plan is proposed to be implemented at the time of reclamation as follows. First, Surface water quality monitoring stations SW-5 and SW-6 will be eliminated due to recontouring activities. Second, water quality samples from the Clearwater Pond will be collected from the ponded water surface at the approximate location of SW-7 and not from the discharge structure itself. Third, a new water quality monitoring station will be added (SW-9) to the monitoring plan at the time of reclamation (if practical and feasible) in order to obtain water quality data from reclaimed refuse pond surfaces. This station will be installed using design technologies and methodologies reasonably and feasibly available at the time of reclamation.

~~For reasons discussed in Section R645-301-728, laboratory pH and laboratory specific conductance are being removed from the surface water monitoring plan.~~

~~For reasons discussed in Section R645-301-728, BTEX-N and propylene glycol are being removed as laboratory parameters for surface water sites SW-4 and SW-5.~~

7.31.300. ACID AND TOXIC FORMING MATERIALS.

No acid or toxic forming materials have been identified in the permit area (see Section 7.28, Appendix E p. E3). The fine refuse sample results (Table 7.28.6) indicate that the materials found within the pond are not acid or toxic producing. Underground development of waste is not stored in the permit area. A summary of sampling history is provided in Section 2.22.

7.31.400 TRANSFER OF WELLS.

Before final release of bond, exploratory or monitoring wells will be sealed in accordance with the requirements of the Division and the State engineer.

7.31.500 DISCHARGES

No discharges of water or any waste into or from underground workings will occur. There are no underground workings in the permit area.

7.31.600 STREAM BUFFER ZONES

The Price River, a perennial river, flows through the permit area. Facilities were constructed within 100 feet of the Price River prior to enactment of SMCRA. These facilities are shown on Dwg. E9-3430. Buffer zone signs have been erected to indicate that no additional disturbance should take place within a 100 foot zone. No temporary or permanent Price River channel diversions are planned.

The Siaperas Ditch and Permanent Diversion are permanent intermittent stream channel diversions. See discussion in 742.320.

7.31.700 CROSS-SECTIONS AND MAPS

~~The water supply intake from the Price River to the River Pump House is shown on Drawing E9-3430, and on Map 712d. Water for processing of refuse in the CWP and water to operate the dredge for mining the refuse will come from the river collection well located near the River Pump House and/or the river diversion to the River Pump House.~~ Water supplies used for dust suppression are sometimes pumped from the Price River. ~~either this river diversion or from the track hopper. The track hopper is located as shown on Maps E9-3341 and 712d.~~

Locations of water diversion, collection, conveyance, treatment, storage and discharge facilities to be used are shown on Dwg. E9-3341.

Location and elevation of each station to be used for water monitoring during coal mining and reclamation operations is shown on Dwg. E9-3451 and Dwg. G9-3509.

Locations of each existing sedimentation pond, impoundment, dam, and embankment are shown on Dwg. E9-3341.

Cross-sections for existing sediment ponds, impoundments and coal processing waste dams are shown on the following drawings.

~~Auxilary Pond~~	~~Dwg. C9-1285 & 712D~~
~~Road Pond~~	~~Dwg. E9-3458 & 712D~~

~~Heat Dryer Pond~~	~~Dwg. E9-3453, A9-1464, & 712D~~
Plant Sediment Pond	Dwg. 4067-6-21
~~Slurry Pipeline Sediment Pond~~	~~Dwg. D5-0163 & 712C~~
Lower Refuse Dike & Clearwater Pond	Dwg. E9-3460
Upper and North Refuse Dikes	Dwg. E9-3427
Clearwater Pond	Dwg. 712B
Refuse Basin	Dwg. 712A

7.31.800 WATER RIGHTS AND REPLACEMENT

No surface coal mining and reclamation activities will occur within the permit area. However, as part of the reclamation activities on the west side of the Price River, removal of coal refuse fines from the slurry ponds is currently being conducted. Because the fines removal ~~however mining of previously deposited coal waste could occur on the east side of the Price River. Further, because the "mining"~~ is actually the removal of recently placed materials, there will be no potential for subsidence or other interruption of ground water.

7.32 SEDIMENT CONTROL MEASURES (R614R645-301-732)

7..32.100 Siltation Structures

Requirements requested within R614R645-301-732.100 of the regulations will be discussed within the specific sections referenced by the regulations.

732.200 through 732.220 Sedimentation Ponds

Requirements requested within R614R645-301-732.200 through R614R645-301-732.220 of the regulations will be discussed within the relevant specific sections referenced by the regulations, including sections R614R645-301-356.300, 356.400, 513.200, 742.200 through 742.240, 763, 513.100, and 513.100 and 513.200. No permanent water impoundments are proposed within the Price River Terminal permit area.

7..32.300 Diversions

Diversion requirements specified by this regulation will be addressed in Section 742.300.

7..32.400 through 732.420 Road Drainage

Information related to surface runoff hydraulics and associated ditch design will be presented within Section 742.300. Other relevant requirements of this section will be discussed in the sections dealing with the sections referenced within the regulations.

7.33 IMPOUNDMENTS 645-301-733

7.33.100 General Plans

There are ~~seven~~ four temporary existing or proposed impoundments located on the permit area. Impoundment locations are shown on Drawing F9-177(rev).

7.33.110 Certification

General plans for the Refuse Basin~~, the Auxiliary Pond,~~ and the Clearwater Basin were developed prior to the implementation of the pertinent State and Federal mining regulations of such ponds and therefore certification as to their design and construction conditions is not available. However, details related to existing structural dimensions and visual conditions are available and are contained in the referenced drawings. Certification can also be given related to the hydraulic characteristics as will be discussed in Section 7.42.

Certified As-Built drawings for the more recently designed Plant Sediment Pond ~~and the Road Pond~~ are referenced in Section 733.120.

~~Certified As-Built drawings from the Dryer Sediment Pond are provided as Sheets 712e and 712f. A certified design drawing for the proposed Auxiliary Pond outlet modification is provided as Dwg. 712.~~

7.33.120 Maps and Cross Sections.

The following drawings contain information on the various impoundments:

~~Auxiliary Pond~~	~~Dwgs. E9-3341, C9-1285, 712d, 712j~~
~~Road Pond~~	~~Dwgs. E9-3341, E9-3453, 712d~~
Plant Sediment Pond	Dwgs. E9-3341, E9-3453, A9-1462, 712e
Upper & Lower Slurry Basins	Dwgs. E9-3341, D5-0163, E9-3435, E9-3460, 712a
Clearwater Pond	Dwgs. E9-3341, E9-3460, 712b
~~Slurry Pipeline Sediment Pond~~	~~Dwgs. E9-3341, D5-0163, 712c~~

Upper & Lower Slurry Basins

The Refuse Basins are large, relatively old basins that contain a large amount of coal refuse from past coal cleaning operations. The Refuse Basins are separated from the Clearwater Basin (discussed below) on the southwest by a constructed dike. Cross-sections of the dike are shown in Dwgs E9-3460. The Refuse Basins are divided by a dike into two parts forming the Upper Refuse Basin and the Lower Refuse Basin [see Figure F9-177(rev)]. The dike for the Lower Basin is higher than the dike for the Upper Basin and therefore the upper and lower basins actually form one impoundment which is separated into two parts by the Upper Refuse Basin dike. The tributary area of the Lower Refuse Basin includes the Upper Refuse Basin and almost 400 acres of mostly undisturbed natural drainage area upstream of the Lower Refuse Basin [see Dwg G9-3504(rev)]. In recent years, the pond has normally been dry, and for the purpose of controlling sediment, the Lower Refuse Basin would contain the total runoff from the PMP.

The Capacity of the Upper Refuse Basin is about 50 acre-feet at the elevation of the spillway (Elevation 5380.2 feet) and 135 acre-feet at the elevation of the top of embankment (Elevation 5381.3 feet). The Lower Refuse Basin dike is higher than the Upper Refuse Basin dike. The capacity of the Lower Refuse Basin is about 760 acre-feet, much larger than the capacity of the Upper Refuse Basin.

Comparison of new mapping (Olympus Aerial Surveys Inc., June 1991) with mapping from the early 1980's reveals that there has been negligible sediment deposition in the Upper Refuse Basin.

Clearwater Basin

The Clearwater Pond is formed between two large dikes (see Dwgs. F9-177(rev), E9-3460, & 712b). The pond can receive overflow water from the spillways (or future decant) of the Refuse Basin Sediment Pond, although such flows have not occurred recently since the Refuse Basin has been dry in recent years.

Previously, during Covol's operations, the Clearwater Pond contained about 205 acre-feet of water that was available to be recycled to the plant. During a large storm event, the structures in the Refuse Basin will meter out water to the Clearwater Pond in a controlled manner over a period of weeks so as not to overtop the Clearwater Pond. Given the excess capacity within the Refuse Basins, this operational procedure also allowed dredging and slurrying to continue, while storm water was adequately handled.

Stage-capacity information for the Clearwater Pond is included in the Hydrologic Appendix in Watershed #7. The Clearwater Pond has a capacity of about 190 acre-feet at the elevation of the spillway, and a capacity of about 240 acre-feet to the elevation of the top of the embankment.

Comparison of new mapping (Olympus Aerial Surveys Inc., June 1991) with mapping from the early 1980's reveals that there has been negligible sediment deposition in the Clearwater Pond.

Plant Sediment Pond

The Plant Sediment Pond (sometimes referred to as the Loadout Sedimentation Pond) is a relatively new pond constructed to collect runoff from Watershed #5 which contained much of the Wellington Preparation Plant when it was active. The locations of the pond and tributary drainage area are shown in Dwgs. G9-3504 (rev) and F9-177 (rev). The pond receives runoff from the top of the Coarse Refuse Pile. As shown in Dwg. 4067-6-21, the pond has a valved, dewatering device, as well as 24-inch diameter CMP riser and barrel serving as the primary spillway, and an open-channel emergency spillway. Both the decant and primary spillway are equipped with skimmers. All pond discharges go into a fairly large ditch called DD-4 in which the flow is conveyed out of the permit area into a natural drainageway that leads to the Price River.

~~Slurry Pipeline Sediment Pond~~

~~The Slurry Pipeline Sediment Pond (sometimes referred to as the Pipeline Sedimentation Pond) is an existing structure located on the eastern side of the Price River adjacent to two old pipelines. The pond collects runoff from a few acres of area that was disturbed when the pipelines were constructed. Dwgs. D5-0163 & 712C show as-built drawings of the pond. As shown in the drawing, a single open-channel spillway (with a grounded riprap channel) conveys any pond effluent directly to the Price River.~~

Dryer Pond

The Dryer Sediment Pond was reconstructed and enlarged in 1994. The pond is located at the eastern end of Watershed #4 [see Dwgs G9-3504 (rev) and F9-177 (rev), and 712d]. The tributary area includes the Road Pond and Auxiliary Pond discussed below. A proposal to modify the pond outlet structure is included in Appendix L of this permit.

Road Pond

The Road Pond is located in Watershed #4 adjacent to a road a short distance northwest of the previous office area as shown on Dwgs. F9-177 (rev) and 712d. The pond has provided some degree of sediment and runoff control. The Road Pond is mostly excavated beneath the east side of the pond from the adjacent roadway on the east. It has a 24-inch diameter spillway. In the event that capacity of the primary spillway is exceeded, the south side of the pond would act as an emergency spillway.

Auxiliary Pond

The Auxiliary Pond is an old pond constructed beneath the surrounding areas (i.e. it was constructed by excavation rather than with dikes). It is located in Watershed #4 on the east side of the office area as shown on Figure F9-177 (rev). The pond is connected to the Road Pond with a 24-inch diameter concrete culvert, and to the existing Dryer Pond with 24-inch diameter concrete culvert which serves as the primary spillway. In the event of overtopping, the entire top of the pond would serve as an emergency spillway.

The runoff from the crude oil transloading operation will go to the Auxiliary Pond; therefore, the outlet box on the primary spillway will be slightly modified to function as a combination oil skimmer and outlet (see also Section 5.21, Dwg. 712j and Dwg. E9-3341).

7.33.140 Subsidence Survey

The Price River Terminal facility ~~Wellington Preparation Plant~~ is not located over any mine workings, consequently the sediment ponds are not susceptible to subsidence.

7.33.150

Preliminary hydrologic and geologic information will be contained in the geologic and hydrologic impacts sections of this permit.

~~733.160 Future Design Plan Certification Statement~~

~~The Proposed Dryer Pond Modifications in Appendix L are certified. The proposed Auxiliary Pond outlet plan to modify it as an oil skimmer is also certified. Certified construction inspections will also be provided.~~

7.33.200 Permanent and Temporary Impoundments

7.33.210 Construction and Maintenance

All impoundments are constructed. ~~Only a proposed modification to the Auxiliary Pond Outlet structure remains to be built.~~

Each of the impoundments will be maintained as required by the referenced sections in R645-301-733 of the Regulations.

7.33.330 through 733.226 Permanent Impoundments

No permanent impoundments are proposed.

~~733-230 Authorization of Temporary Impoundments~~

~~The construction of the Dryer Sediment Pond and the decant modifications for the Road Pond, the Auxiliary Pond, and the Refuse Basin Sediment Pond was not done until written authorization was received from the Division.~~

733-240 Potential Hazard Notification

The applicant agrees to notify the Division according to R645-301-525.200 should a potential hazard to any impoundments be disclosed.

7.34 DISCHARGE STRUCTURES (~~R614~~R645-301-734)

Information relating to discharge structures will be provided in Section 7.44.

7.35 DISPOSAL OF EXCESS SPOIL (~~R614~~R645-301-735)

No excess spoil is disposed of on site.

7.36 COAL MINE WASTE (~~R614~~R645-301-736)

Coal mine waste has been placed in a controlled manner (see Section 7.46).

7.37 NONCOAL WASTE (R645-301-737)

There is little noncoal waste generated with the present operations at the Price River Terminal facility Wellington Preparation Plant. That which is generated is in compliance with R614-301-747.

7.38 TEMPORARY CASING AND SEALING OF WELLS (~~R614~~R645-301-738)

Each well used to monitor ground water conditions will comply with R614-301-748 and will be protected during their use. Each water well will be cased, sealed or otherwise, managed as approved by the Division, to prevent acid or other toxic drainage from entering ground or surface water, to minimize disturbance to the hydrologic balance and to insure the safety of people, livestock, fish and wildlife, and machinery in the permit and adjacent area.

7.40 DESIGN CRITERIA AND PLANS

Site-specific design criteria and plans are submitted in this plan to control drainage from disturbed and undisturbed areas.

7.42 SEDIMENT CONTROL MEASURES (~~R614~~R645-301-742)

A discussion of sediment control measures at the Price River Terminal permit area ~~Wellington Preparation Plant~~ is contained below:

742.100 through 742.126 Sediment Control Measures

Appropriate sediment control measures have been designed and maintained; or proposed, using appropriate technology to minimize erosion and additional contributions of sediment to runoff outside the permit area. Sediment control measures incorporated within the permit area include: 1) retaining sediment within disturbed areas, 2) diverting runoff away from disturbed areas, 3) use of protected channels through disturbed areas, and 4) using straw dikes, riprap, silt fences, vegetative sediment filters, and dugout ponds.

~~Similarly, at the Covol Coal Fines Wash Plant, sediment and runoff will be controlled by site grading, drainage ditches, culverts, erosion matting, and riprap. All disturbances associated with the plant, except for the construction associated with the water lines, will be within the boundaries of Watershed #7, on previously disturbed ground. All runoff from Watershed #7, on previously disturbed ground. All runoff from Watershed #7 (both currently and under Covol's future operations) is ultimately retained within the Refuse Basin Sediment Pond. Any sediment or runoff generated from the minimal activities associated with the water line placement will be treated with Alternative Sediment Control Areas (ASCA's) 4 and 5.~~

~~In order to minimize sediment production at the Covol Wash Plant site, local sediment and runoff control has been designed to direct runoff in a controlled manner through the site and toward the Refuse Basin sediment Pond. Five drainages ditches and two culverts, as shown on Drawing T1-9597, will direct storm water runoff to the lower refuse pond in a controlled manner. One ditch (CVL-D2) and one culvert (CLV-C2) may also convey plant water during maintenance or upset conditions. For permitting purposes, runoff calculations were done to ensure that designs for these structures met Utah Division of Oil, Gas, and Mining's 10-year, 24 hour storm criteria. Where appropriate, plant water during upset conditions was included as a baseflow in these calculations to represent the worst-case condition of a design event occurring simultaneous with upset conditions. Subbasins contributing runoff to or through the plant site were designed 7A through 7F; their boundaries are shown on Drawing T1-9597. Tables 742-0a, 742-0b, and 742-0c provide summaries of runoff and structure calculations and results; Computer printout documentation has been added to Volume II – Hydrologic Appendix Watershed 7. Due to the active stockpiling activities and varying travel pathways within the pad area, Covol expects to maintain general runoff patterns by grading as needed to convey runoff to the structures as designed. In addition, interim revegetation and erosion control matting will be placed on steep fill slopes associated with the column pad.~~

~~In addition to the plant site area, disturbances associated with the construction of the Covol Wash Plant include placement of the water lines, excavation within the northwest refuse pond, stockpiling topsoil, stockpiling coal fines. Sediment control for the water lines is in place at ASCA's 4 and 5. Because the excavation and coal fines stockpiling activities will occur within the boundaries of the existing refuse areas, no additional sediment control is required for those disturbances. The topsoil stockpile is located adjacent to an existing topsoil stockpile near the Siaperas ditch, within Watershed #7, and sediment control via silt fences is in place.~~

7.42.200 through 7.42.214 Siltation Structures

Additional contributions of suspended solids and sediment to streamflow or runoff outside the permit area will be largely prevented through the use of various siltation structures. Certifications regarding the design and construction of the sediment control ponds are discussed in Section 733.110. The existing and proposed sediment control ponds will be maintained in accordance with the referenced sections in Section 742.213 of the Regulations. There are no underground mine workings within the permit area from which point source water discharges can emanate. The design of the sediment ponds located on the permit area is provided in Section 742.220 below.

TABLE 742-0a. Covol Wash Plant Runoff Summary.

Watershed ID	Draiange Area (acres)	Curve Number	10-yr 24 hr Storm Peak (cfs)	10-yr 24-hr Storm Runoff (acre-feet)
CVL-7A	0.6	93	0.7	0.06
CVL-7B	0.6	93	0.7	0.06
CVL-7C	2.8	93	3.2	0.27
CVL-7D	0.5	93	0.6	0.05
CVL-7E	2.8	93	3.2	0.27
CVL-7F	2.0	93	2.3	0.19

TABLE 742-0b. Drainage Ditch Design Summary

Ditch ID	Contributing Watersheds	Contributing Area (acres)	Design Peak (cfs)	Design Depth (feet)*	Design Velocity (fps)	Riprap?
CVL-D1	CVL-7A, D, E	3.9	4.4	0.7	6.1	N
CVL-D2	CVL-7B	0.6	2.7**	0.2	4.9	N
CVL-D3	CVL-7A, C, D, E	6.7	7.6	0.3	5.3	Y
CVL-D4	CVL-7A	0.6	0.7	0.3	3.6	N
CVL-D5	CVL-7A, D	1.1	1.2	0.2	2.1	N

*Design Depth does not include freeboard; minimum 0.5 feet freeboard is included in ditch cross sections.

**Design peak includes 2 cfs from plant upset.

TABLE 742.0c Culvert Design Summary

Culvert ID	Contributing Ditch	Design Peak Flow (cfs)	Minimum Allowable CMP Culvert Diameter (inches)
CVL-C1	CVL-D1	4.4	15
CVL-C2	Area CVL07F	4.3	12

7.42.220 through 7.42.221 Sedimentation Ponds

~~Six~~Two existing ponds are included in the sediment control plan. These ponds include the Plant Sediment Pond, and the Refuse Basin Sediment Pond.~~, Slurry Pipeline Pond, Road Pond, Auxiliary Pond and the Dryer Sediment Pond. The Road Pond, Auxiliary Pond and the Dryer Sediment Pond are used in series.~~ The Plant Sediment Pond, Slurry Pond, and the Refuse Basin Sediment Pond are used independently with respect to each other. The sediment ponds are located near the disturbed area, and will be maintained to provide adequate sediment storage volume as described below.

~~The Road Pond, Auxiliary Pond and Dryer Sediment Pond are connected in series. The Dryer Pond was enlarged in 1994, and will contain the entire runoff from the 10-year 24-hour precipitation event, plus all water that enters through an existing water pipeline that runs from the pumphouse on the east side of the Price River (for more details, refer to Appendix M). The computed 10-year 24-hour runoff to the series of ponds is presented in Table 742-1 along with available storage between proposed decant elevations and spillway elevations. Stage capacity curves are presented in the Hydrologic Appendix (Volume II). The peak 25-year 6-hour storm event discharge from the pond was computed assuming the pond full to the spillway elevation prior to the start of the storm.~~

~~The Dryer Sediment Pond serves as the final treatment facility for Watershed No. 4. The Dryer Sediment Pond, as constructed, will provide dead storage (i.e. storage below the decant level) for nearly 10 times the computed 3-year sediment volume (see computations in Hydrology Appendix, Volume II).~~

~~Table 742.1. Watershed No. 4 Sediment Ponds, Design Capacities and Available Volumes.~~

~~Sediment Pond~~	~~Drainage Area (acres)~~	~~Weighted CN~~	~~10-yr 24 hr Storm Runoff (acre-feet)~~	~~Available Storm Storage Volume (acre-feet)~~	~~25-yr 6-hr Storm Peak Discharge (cfs)~~
~~Road Pond~~	~~6.5~~	~~88.3~~	~~0.45~~	~~0.48~~	~~1~~
~~Auxiliary Pond~~	~~35.7~~	~~88~~	~~2.45~~	~~0.79~~	~~11~~
~~Dryer Sediment Pond~~	~~8.3~~	~~92.7~~	~~0.78~~	~~4.61~~	~~13~~
~~Total Watersahed No. 4~~	~~50.5~~	~~89~~	~~3.68~~	~~5.88~~	~~13~~

The Plant Sediment Pond~~, Slurry Pipeline Sediment Pond,~~ and the Refuse Basin Sediment Pond will contain the entire estimated 10-year 24-hour precipitation event (see Table 742-2). The Plant Sediment Pond has a valved, dewatering device with a skimmer to maintain the detention time required under ~~R614~~R645-301-742.221.32. The Refuse Basin Sediment Pond outlet structure will be modified to include a dewatering device~~. The dewatering plan for the Slurry Pipeline Sediment Pond includes a floating pump intake and pump.~~ Excessive settlement has not appeared to be any problem with the existing sediment ponds.

Table 742.2 The Plant Sediment Pond, Slurry Pipeline Sediment Pond, and the Refuse Basin Sediment Pond Design Capacities.

Sediment Pond	Drainage Area (acres)	Weighted CN	10-yr 24-hr Runoff (acre-feet)	3-year Sediment Load (acre-feet)	Peak Discharge (cfs) 25-yr 6-hr	Peak Discharge (cfs) 10-yr 6-hr
Plant Sediment Pond	20.5	87	1.41	0.02	2.9	N/A
Lower Refuse Basin Sediment Pond	589	91	48.6	0.72	N/A	NONE
~~Slurry Pipeline Sediment Pond~~	~~7.35~~	~~85~~	~~0.4~~	~~0.006~~	~~2.25~~	~~N/A~~

Stage-capacity curves are presented for each of the ~~three~~ existing sediment ponds in Volume II-Hydrology Appendix.

The mean annual sediment yield to each sediment pond was estimated as described in Volume II – Hydrology Appendix. Tributary areas were subdivided based on characteristics of the subareas that would affect erosion, such as vegetation type and soil type. Decant elevations are set to be at least two feet higher than the elevation represented when 60 percent of the 3-year sediment ~~lead~~load is present in the ponds (as determined from the elevation-capacity curves in Volume II Hydrology Appendix. The decant elevations are listed in Table 742-3.

Table 742-3. Sediment Pond Design Elevations.

Sediment Pond	60% Cleanout Elevation	Decant Elevation	Primary Spillway Elevation	Emergency Spillway Elevation
~~Road Pond~~	~~5334.5~~	~~5336.5~~	~~5338.5~~	~~5339.3~~
~~Auxiliary Pond~~	~~5333.5~~	~~5335.9~~	~~5339.1~~	~~5340~~
~~Dryer Sediment Pond~~	~~5330.3~~	~~5331.6~~	~~5336.9~~	~~5336.9~~
Plant Sediment Pond	5336	5337	5338	5339
~~Slurry Pipeline Sediment Pond~~	~~5334~~	~~5336~~	~~5360.1~~	~~5360.1~~
Refuse Basin Sediment Pond	5370.1	5374	5376	5376

7.42.221.34 Nonclogging dewatering device.

PLANT SEDIMENT POND. The Plant Sediment Pond has a valved, dewatering device with a skimmer to maintain the detention time required under ~~R614~~R645-301-742.221.32.

REFUSE BASIN SEDIMENT POND. The Refuse Basin Sediment Pond outlet structure will be modified to include a dewatering device. The minimum decant elevation is two feet above the 60% sediment cleanout level. Three-year sediment level would be about 5370.1 feet (based on 3-year sediment volume estimate of 0.72 acre-feet and the stage-volume curve). Setting the decant elevation at 5374 feet provides about 150 acre-feet of storage. The pond is normally dry with present operating conditions. Annual potential evaporation far exceeds annual runoff volumes. The 100-year 24-hour runoff volume (88.8 acre-feet) could easily be contained in the proposed dead storage (150 acre-feet), therefore it is expected that the pond will fill to the decant level only in very rare events.

The adequacy of the Refuse Basin Sediment Pond for the design treatment event (10-year 24-hour rainfall event) was analyzed using the Army Corps of Engineers Flood Hydrograph Package computer program HEC-1 (see printouts in Hydrologic Appendix). The analysis predicts that with the Refuse Basin full to the decant level at the beginning of a storm a detention time between inflow and outflow hydrographs much greater than 24 hours would be provided using a 3 inch diameter dewatering orifice. Therefore the Refuse Basin Sediment Pond with the proposed automatic decant will provide adequate detention time to allow effluent to meet Utah and Federal effluent limitations.

~~**SLURRY PIPELINE SEDIMENT POND.** The existing Slurry Pipeline Sediment Pond has a total capacity to the existing grouted riprap spillway of about 1.7 acre-feet (see stage-capacity curve in Hydrologic Appendix). This is more than adequate to contain the runoff from a 10-year 24-hour runoff event (0.4 acre-feet) plus expected sediment volume (0.006 acre-feet, see computations in Hydrologic Appendix).~~

~~Storm runoff waters which collect in the Slurry Pipeline Sediment Pond will be retained until UPDES discharge limitations can be achieved (24 hours minimum) and then discharged by pumping either to the grouted riprap spillway or directly to the Price River.~~

~~A floating pum intake will be utilized in conjunction with a staff gauge to allow dewatering of the contents of the pond. The intake will include an oil skimmer (down turned pipe elbow. See Drawing 712c). The steel post will be painted with a red stripe set at the lowest dewatering level (i.e. 5356.0 feet, about 3 feet above pond bottom elevation). The portable gasoline powered pump will be manually operated to assure pump shutoff at the appropriate level (i.e. red stripe). The pump will have a minimum capacity of 270 gpm with 12 feet of head requiring a minimum 2 horsepower engine.~~

~~**ROAD POND, AUXILIARY POND, & DRYER SEDIENT POND.** The Road Pond, Auxiliary Pond and the Dryer Sediment Pond are connected in series and will contain the entire runoff from the 10-year 24-hour precipitation event from Watershed No. 4 (see Drawing F9-177 rev.). The computed 10-year 24-hour runoff to the series of ponds is presented in Table 742.1 along with available storage between proposed decant elevations and spillway elevations. Stage capacity curves are presented in the Hydrologic Appendix. The peak 25-year 6-hour storm event discharges from the ponds was computed assuming the ponds full to the spillway elevation prior to the start of storm (see HEC-1 printout in Hydrologic Appendix).~~

~~The Dryer Sediment Pond will serve as the final treatment facility for Watershed No. 4. The Dryer Pond provides dead storage (i.e. storage below the decant level) for approximately 10 times the computed 3-year sediment volume (see computation sin Hydrologic Appendix).~~

~~The Dryer Pond has been fitted with an open channel spillway, and will be decanted by a portable pump and floating decant, as described in Appendix L.~~

~~742.222 through 742.223 Spillway Requirements~~

~~The Refuse Basin Sediment Pond meets the size criteria of the MSHA, 30 DFX 77.216(a), and is consequently required to have a single spillway or principal and emergency spillways that in combination will safely pass the runoff from a 100-year, 6-hour precipitation event. Hydrologic Sediment Pond has more than adequate capacity to completely contain the runoff from a PMP 6-hour event (see Hydrologic Appendix).~~

~~The remaining five sediment ponds (Roads Pond, Dryer Sediment Pond, Plant Sediment Pond, and Pipeline Slurry Pond) do not meet the qualifying criteria (i.e. are small in both storage volume and dike height). Consequently the spillways on these five structures must be able to pass the runoff from a 25-year, 6-hour precipitation event, and can utilize a single spillway if the spillway is an open channel of non-erodible construction where sustained flows are not required or may be earth- or grass-lined with non-erosive velocities where sustained flows are not expected. The Slurry Pipeline Sediment Pond, Plant Sediment Pond and the Dryer Sediment Pond meet these requirements.~~

The estimated peak discharge during the 25-year, 6-hr precipitation event calculated for the sediment ponds as well as the estimated peak flow from the 100-yr, 6hr precipitation event for the Lower Refuse Basin Sediment Pond are shown in Tables 742-1 and 742-2. Backup calculations are described in Volume II – Hydrology Appendix.

~~The Road Pond and Auxiliary Pond are small ponds and do not meet the size qualifying criteria of MSHA, 30DVF 77.216(a). In accordance with R645-301.742.223 these ponds should have a combination of principal and emergency spillways that will safely discharge a 25-year, 6-hour precipitation event. Both of these ponds have primary spillways consisting of culverts and earth lined emergency spillways. The principal spillways of both ponds have capacity to pass the 25-year, 6 hour event without ever topping the emergency spillways. Analyses are provided in Volume II – Hydrologic Appendix Watershed #4 which demonstrates that the earthlined emergency spillways for the Road Pond and Auxiliary Pond have non-eroding velocities even in the case when the primary spillways are pluged and the total design event (25-year 6-hour) is spilled.~~

~~The ponds have sufficient storage capacity to totally contain the runoff volume from the 10-year 24-hour precipitation event between the decant elevations and the primary spillway elevations as listed in Table 742-3. The water level in the ponds will normally be maintained at or below the decant level in anticipation of a runoff producing event.~~

7.42.230 through 7.42.232 Other Treatment Facilities

Other than the treatment facilities specified above, no other treatment facilities exist within the Price River Terminal permit area.

7.42.300 Diversions

Flow from some undisturbed areas is diverted around disturbed areas.   These diversions are discussed below.

7.42.310 through 7.42.314 General Requirements

Diversion UD-1 and its extension UD-1A of Watersheds #2 and #3, respectively, the so-called Permanent Diversion of Watershed #10, and the Siaperas Ditch of Watershed #9 divert runoff around disturbed areas within the permit area [see Dwgs. G9-3504 and F9-177(rev.)].

UD-1 is a temporary diversion that diverts drainage from 226 acres of undisturbed hills on the west side of the permit area. Certified as-built drawings are shown in Dwg. G9-3501. Calculations show that the design appears to be adequate to safely pass the runoff from a 10-year, 6-hour precipitation event. Calculations also show that velocities within the channel during this design storm are within the recommended limits for the channel material to prevent serious erosion. These calculations are shown in Volume II – Hydrology Appendix. The ditch empties into a subsequently installed extension named UD-1A.

UD-1A is a temporary diversion that receives the discharge from UD-1, discussed above, as well as from an additional 231 acres of additional undisturbed area in the hills west of the permit area. Certified as-built drawing of the diversion are contained in Dwgs G9-3502 and G9-3503. Because UD-1A prevents run-on onto the Coarse Refuse Pile, R645-301-746.212 states that the ditch must be designed to safely pass the runoff from a 100-year, 6-hour precipitation event. Calculations contained in Volume II – Hydrology Appendix show that the design of a UD-1A adequately meets this requirement. Calculations contained in the appendix also show that velocities within the channel will be within the recommended limits for the channel material to prevent serious erosion.

Maintenance of the side-slopes to repair rills and gullies from overland flows on that side of the diversion where the land is undisturbed had been problematic for several years. Reasons for the rills and gullies are caused due to the very nature and function of the diversion – to control runoff from a large area of undisturbed land from entering the disturbed areas of the permit. When a given storm event occurs, runoff from the undisturbed watershed breaks through repairs that were previously made to that side of the diversion causing the sediments from the bank (that in effect function as “small dams”) to be deposited once again on the diversion bottoms.   In the past this material has then been replaced to the side-slopes from which it came. This maintenance then prevents waters from entering the diversion until a large enough storm event occurs to break through and begin the maintenance process all over again. Moreover, when the bank material is deposited to the diversion bottoms, it may interfere with the primary function of the diversion – to transport runoff waters and prevent them from entering the disturbed areas.

This maintenance issue has been noted and reported to the State of Utah, Division of Oil, Gas & Mining (DOGM) inspectors. Therefore, during an onsite inspection by representatives from NEICO (P. Collins) and DOGM (P. Burton and D. Dean) on August 29, 2006 and agreement was made that routine maintenance to repair the rills and gullies on the "undisturbed" side of the diversion has been impractical and should not be continued for the reasons described above. Even though the as-built drawings mentioned above could be interpreted to suggest maintenance otherwise, the verbiage here should be consulted by future site operators and DOGM inspectors. Other maintenance matters of the diversion should however be continued to allow them to function as designed.

The so-called Permanent Diversion, located near the Upper Refuse Basin on the east side of the permit area, is a permanent diversion that diverts runoff from 680 acres of undisturbed hills to the east of the permit area. The Permanent Diversion was constructed nearly 20 years ago. The ditch was originally designed to have a 10 foot wide bottom width with 1.5 horizontal to 1 vertical side slopes and a 4 inch thick layer of riprap in selected locations (see Dwg. E9-3427). Field examination (June 19, 1993) and analysis of the 1991 mapping reveals that the channel is well-vegetated and is stable when compared to surrounding channels. In accordance with R645-301-746.212, this diversion must be designed to safely pass the runoff produced for a 100-year, 6-hour precipitation event since it prevents run-on into the Upper Refuse Basin. Calculations contained in Volume II – Hydrology Appendix show that the design of the Permanent Diversion adequately meets this requirement.

The Siaperas Ditch is an old ditch that collects runoff from agricultural and undisturbed lands northwest of the permit area as shown on Dwg. G9-3504. The tributary area includes as much as 1266 acres in addition to the flow from the 680-acre drainage area diverted by the Permanent Diversion that empties into the Siaperas Ditch, for a total tributary area of 1946 acres. In accordance with R645-301-746.212, the Siaperas Ditch must safely pass the runoff produced from a 100-year, 6-hour precipitation event since it prevents run-on into the Upper Refuse Basin. Calculations contained in Volume II – Hydrology Appendix show that the Siaperas Ditch can adequately meet this requirement.

To demonstrate the Siaperas Ditch was designed to minimize adverse impacts to the hydrology balance, the Utah Division of Oil, Gas & Mining, recommended that water samples be taken from the Siaperas Ditch and ground water monitoring stations GW-2 and GW-3 at the same time for comparisons (letter from J. Helfrich, 8/30/96). These samples were collected on September 26, 1996. The sample was taken from the Siaperas Ditch about 100 ft upstream from the county road when the ditch was full or at level to near overflow at the outlet culvert.

Water surface elevation measured September 26, 1996 indicated a small gradient from the slurry basin toward the Siaperas Ditch. The water chemistry was significantly different between that measured in the Siaperas Ditch compared with the monitoring wells suggesting very little mixing of the water between the Siaperas Ditch and the slurry basin (see data in Watershed #9 Hydrology Appendix). We believe the pool in the Siaperas Ditch does not have a significant effect on ground water beneath the slurry basin and does not have a significant negative environmental consequence. However, because a significant storm event occurred prior to the September 26 sample date, the sample may have been a reflection of the rainfall rather than the irrigation waters as was intended. Therefore, the sampling will be repeated during the irrigation season of 1997 as an attempt to demonstrate whether or not the design of the Siaperas Ditch minimizes adverse impacts to the hydrologic balance.

The ditches located at the Pipeline Slurry pond are used to collect runoff from the tributary disturbed area and convey the runoff to the pond. Hydrologic and –hydraulic computations for these ditches are provided in the Volume II – Hydrology Appendix Watershed #8. The 1991 mapping indicates that the channels are approximately V-shaped with 2 horizontal to 1 vertical side slopes.

Hydraulic analysis of the Pipeline Slurry south ditch indicates that the steepest section has a design velocity (with the 10-tyear, 6-hour storm event) of about 5.2 fps. Erosion control blankets are proposed to be used in all reaches of the south ditch which have bottom slopes exceeding 4%. These erosion control blankets will be installed in accordance with the manufacturer recommendations.

The Pipeline Slurry north ditch has a small tributary area (about 1.1 acres) and hydraulic analysis with the 10-year, 6-hour design flow rate indicates that the ditch is stable.

7.42.320 through 7.42.324 Diversion of Perennial and Intermittent Streams

The Siaperas Ditch is an old ditch that collects runoff from agricultural and undisturbed lands northwest of the permit area as shown on Dwg. G9-3504. The tributary area includes as much as 1266 acres in addition to the flow from the 680 acre drainage area diverted by the Permanent Diversion that empties into the Siaperas Ditch, for a total tributary area of 1946 acres. In accordance with R645-301-746.212, the Siaperas Ditch and must safely pass the runoff produced from a 100-year, 6-hour precipitation event since it prevents run-on into the Upper Refuse Basin. Calculations contained in Volume II – Hydrology Appendix show that the Siaperas Ditch can adequately meet this requirement.

The so-called permanent Division is a permanent diversion that diverts runoff from 680 acres of the undisturbed hills to the east of the permit area. The permanent Diversion was constructed approximately ten years ago. The ditch was originally designed to have a 10 ft width bottom width with 1.5 horizontal to 1 vertical side slopes and a 4 inch thick layer of riprap in selected location (see Dwg. E9-3427). Field examination (June 19, 1993) and analysis of the 1991 mapping reveals that the channel is well vegetated and stable when compared to surrounding channels. In accordance with R645-301-746.212, this diversion must be designed to safely pass the runoff produced for a 100-year, 6-hour precipitation event since it prevent run-on into the Upper Refuse Basin. Calculations contained in Volume II – Hydrology Appendix shows that the design of the Permanent Diversion adequately meets this requirement.

~~The Covol coal fines wash plant will be built within Watershed #7 (Drawing 712a). There is almost no tributary watershed uphill from the plant site and lower margin of the plant site is adjacent to the Lower Refuse Pond. Therefore, there are no perennial, intermittent or ephemeral channels that will be impacted by the Covol coal fines wash plant, as such, no diversion area planned. Runoff from the plat site will be controlled with grading to 2 percent along the existing topographic slope, and with structures as described on page 1 of Section 7.42.~~

7.43 IMPOUNDMENTS (~~R614~~R645-301-743)

7.43.100 General Requirements

For information regarding the four existing sediment pond impounds, refer to section 7.42. There is one ~~are three~~ additional, temporary impoundment~~s~~ within the permit boundary: Clearwater Basin~~, Road Pond, and Auxiliary Pond~~. A narrative discussing this ~~these~~ impoundment~~s~~ is contained in Section 7.33 of this permit.

7.43.110

~~Of these three impoundments, only~~ The Clearwater Basin meets the MSHA requirements (it has a capacity greater than 20 acre-feet). Requirements requested within ~~R614~~R645-301-743.100 of the regulations, when relevant.

7.43.120 Certifications

The information requested in this section is discussed in Section 733.110.

7.43.130 Spillways

~~Road Pond impoundment has a berm less than two feet high on the east side. The top of the pond is at grede on the south side with a width of about 30 feet. In the event that the capacity of the Road Pond primary spillway (24-inch diameter concrete pipe, 13 cfs capacity) is exceeded and an spill occurs from the pond, the south side of the pond would act as and emergency spillway which would pass 90 cfs with one-foot of freeboard on the east side. Therefore the spillway capacity for the Road Pond meets the requirements.~~

~~Auxiliary Pond impoundment is totally below the surrounding grade (i.e. constructed by excavation rather than diking). In the event that the capacity of the Auxiliary Pond primary spillway (24-inch diameter concrete pipe, 7 cfs capacity) is exceeded and a spill occurs from the pond, the pond would spill to the surrounding area without jeopardizing the safety of the impoundment. Therefore top of the pond would act as an emergency spillway. Therefore the combined capacity of the primary and emergency spillways exceed the 25-year 6-hour peak runoff predicted peak for all of Watershed #4 (i.e. < 22 cfs), therefore the spillway capacity for the Auxiliary Pond Impoundments meets the requirements.~~

~~Runoff/Overflow from both the Roadside and Auxiliary will go to the enlarged Dryer Pond. This pond is large enough to contain all the runoff from Watershed No. 4, as shown on Table 742-1.~~

Clearwater Pond is the only impoundment that meets MSHA requirements (i.e. has greater than 20 acre-feet capacity). The Clearwater Pond has more than sufficient storage between the primary and emergency spillways to contain the 100-year 6-hour storm runoff event (see computations in /Volume II – Hydrologic Appendix with Watershed #7). Therefore the Clearwater Pond meets the spillway requirements.

7.43.140 Inspections

Refer to Section 733.210 of this permit.

7.43.200 Permanent Impoundments

There are no permanent impoundments in the permit area.

7.43.300 Design Storm

Refer to Section 7.43.130

7.44 DISCHARGE STRUCTURES (R645-301-744)

The Refuse Basin Sediment Pond meets the size criteria of MSHA, 30 CFS 77.216(a), and is consequently required to have a single spillway or principal and emergency spillways that in combination will safely pass the runoff from a 100-year, 6-hour precipitation event.

The ~~remaining five sediment ponds (Road Pond, Auxiliary Pond, Dryer Sediment Pond,~~ Plant Sediment Pond~~, and Pipeline Slurry Sediment Pond~~) does not meet the qualifying criteria (i.e. are small in both storage volume and dike height). Consequently the spillway~~s on these five~~ on this structure~~s~~ must be able to pass the runoff from a 25-year, 6-hour precipitation event, and utilize a single spillway if the spillway is an open channel of non-erodible construction where sustained flows are required or may be earth- or grass-lined with non-erosive velocities where sustained flows are not expected. The Slurry Pipeline Sediment Pond and the Plant Sediment Pond meet these requirements. ~~The Dryer Sediment Pond is also designed to meet this requirement.~~ The estimated peak discharge during the 25-year, 6-hour precipitation event calculated for the sediment ponds as well as the estimated peak flow from the 100-year, 6-hour precipitation event for the Lower Refuse Basin Sediment Pond are shown on Tables 742-1 and 742-2 (see Section 7.42 Sediment Control Measures). Backup calculations are described in Volume II – Hydrology Appendix.

~~The Road Pond and Auxiliary Pond are small ponds and do not meet the size qualifying criteria of MSHA, 30 CFR 77.216(a). In accordance with R645-302-742.223 these ponds should have a combination of principal and emergency spillways that will safely discharge a 25-year, 6-hour precipitation event. Both of these ponds have primary spillways consisting of culverts and earth lined emergency spillways. The principle spillways of both ponds have capacity to pass the 25-year 6-hour event without overtopping the emergency spillways. Analysis is provided in Volume II – Hydrologic Appendix Watershed #4 which demonstrates that the earthlined emergency spillways for the Road Pond and Auxiliary Pond have non eroding velocities even in the case when the primary spillways are plugged and the total design event (25-year 6-hour) is spilled. These ponds flow to the Dryer Pond, which is large enough to contain all the runoff from Watershed No. 4. The Dryer Pond outlet is also proposed to be modified to a single, open-channel spillway, which is more than adequate to convey the entire runoff from Watershed No. 4 for a 25 year 6-hour event. (See Appendix L for details).~~

7.45 DISPOSAL OF EXCESS SPOIL (~~R614~~R645-301-745)

No excess spoil is disposed of on site.

7.46 COAL MINE WASTE (R645-301-746)

Coal mine waste has been placed in a controlled manner. The operator will include dates waste materials are received and volume received in the inspection reports.

7.46.200 Refuse Piles

Refuse disposal areas do not contain springs or seeps.

There is one permanent refuse pile (designated the "plant coarse refuse pile" located in the vicinity of the plant) and one temporary pond refuse pile (designated "pond coarse slurry refuse pile (temporary)" located adjacent to the Upper Refuse Basin (see MRP Map E9-3341).

Drainage control design for the coarse refuse pile (located adjacent to the plant) is provided in Volume II Hydrologic Appendix: hydrology and hydraulics for control of runoff from areas above the refuse pile are presented in computations for Watershed No. 3 (Ditch UD-1A) and runoff from the surface of the coarse refuse pile is included in Watershed No. 5 (Plant Sediment Pond). Drainage systems associated with the Plant Refuse Pile are designed for the 100-year 6-hour storm event.

Drainage from the temporary pond refuse pile is tributary to the Refuse Basin Sediment Pond and is included in computations for Watershed No. 7 in the Volume II Hydrologic Appendix.

The temporary pond coarse slurry refuse pile was formed by deposition of coarse material during operation of the slurry pipeline. The slurry pipeline conveyed a mixture of crushed rock, coal fines, and water. Material suspended in discharge from the slurry pipeline was directed over the surface of the pond coarse slurry refuse pile and thence the discharge ran off into the Upper Refuse Basin. The Refuse Basin Sediment Pond provides for control of runoff from the pond coarse slurry refuse pile.

Design information for construction of the refuse piles is contained in "As-Built Specifications, Designs, Approval Letters, and Other Information for Coal Refuse Piles and Impoundments" which is included in the Hydrologic Appendix (June 1993). The plant refuse pile located adjacent to the plant site was started in March 1958. It consists of ¼ inch plus mine reject from a heavy media plant. It was used when a problem occurred in the refuse crushing or pumping system of the plant. The refuse material was hauled from the plant refuse by-pass bin to the area by truck and dumped. The piles of refuse were layered and compacted by dozer. Results of geotechnical investigation of the plant refuse pile is included in Appendix H.

There are no underdrains beneath either refuse pile.

746.221 Slope Protection

After the plant refuse pile is covered with 4 feet of soil cover, the plant refuse pile and all diversion channels will be revegetated. Using the Revised Universal Soil Loss Equation methodology (see computations in Hydrologic Appendix Watershed No. 6), a erosion rate of less than 2.5 tons/acre/year is predicted for the reclaimed plant refuse pile. An erosion rate of 2.5 tons/acre/year is equivalent to losing about 0.015 inches of soil per year. In reality, the net loss of soil will be less due to soil additions from plants and animals.

After the surface of the pond coarse slurry pile and slurry basins are covered with 4 feet of soil cover, the associated disturbed areas will be revegetated. Slope erosion computations (see Hydrologic Appendix Watershed No. 7) predict slope loss of less than 2 tons/acre/year.

7.46.300 Impounding Structures

Impounding Structures – Coal waste impoundments are designed to comply with 645-301-512.230, 645-301-515.200, 645-301-528.320, 645-301-536 thru 645-301-536.200, 645-301-536.500, 645-301-542.730 and 645-301-746.100.

No acid mine seepage will occur from coal mine waste impoundments.

Spillways of the Refuse (Slurry) Basins are designed to pass the runoff from the 100-year 67-hour precipitation event. Hydrologic computations for the Probable Maximum Precipitation (PMP) event demonstrate that the Refuse Basins have more than adequate capacity to completely contain the runoff from a PMP 6-hour event (see Hydrologic Appendix).

After final reclamation, storm runoff from areas above the refuse basins will be diverted around the reclaimed refuse basin surfaces through the permanent diversion ditch, and the lower refuse basin diversion ditch; which are designed to adequately pass the runoff from a 100-year 6-hour storm event (see Hydrologic Appendix).

7.46.311

No impounding structures constructed of coal mine waste will be retained after final reclamation. Both the Lower and Upper Refuse Dikes will be graded even with the surface of the refuse basin during reclamation. The north dike (which is not constructed of refuse) will continue to provide protection from runon from the Siaperas ditch after final reclamation.

7.46.400

No coal processing waste will be returned to abandoned underground workings. There are no underground mine workings in the Price River Terminal permit area.

7.47 DISPOSAL OF NONCOAL WASTE (R645-301-747)

———There are presently no noncoal waste storage sites. Only small amounts of garbage are generated on the site which are collected and kept temporarily in containers and periodically hauled to the county land fill.

7.48 CASING AND SEALING OF WELLS (R645-301-748)

Each water well will be cased, sealed or otherwise, managed as approved by the Division, to prevent acid or other toxic drainage from entering ground or surface water, to minimize disturbance to the hydrologic balance and to insure the safety of people, livestock, fish and wildlife, and machinery in the permit and adjacent area.

Monitoring wells will be flagged and extended as needed to provide protection during the reclamation regarding operations.

7.50 PERFORMANCE STANDARDS (~~R614~~R645-301-750)

The Price River Terminal facility ~~Wellington Preparation Plant~~ will conform with performance standards outlined in ~~R614~~R645-301-750 through ~~R614~~R645-301-755 of the state regulations.

7.51 WATER QUALITY STANDARDS AND EFFLUENT LIMITATIONS (R614R645-301-751)

The Price River Terminal facility Wellington Preparation Plant will conform with performance standards outlined in R614R645-301-750 through R614R645-301-755 of the state regulations.

7.52 SEDIMENT CONTROL MEASURES (R645-301-752)

All sediment control measures except for the Alternative Sediment control Areas (ASCA's) have been addressed previously in Section 7.42. A discussion for the ASCA's follows.

There have been seven areas identified for ASCA's. These areas, numbered ASCA #1 through ASCA #7, are shown on Dwg. F9-177 (rev.). The disturbed acreage and estimated disturbed area runoff from the 10-year, 24-hour storm has been estimates and area shown in Volume II - Hydrology Appendix. These areas are not tributary to a sediment pond. Sediment control from these areas is achieved by berm, silt fences, bales and/or gouges in drainageways, as discussed in the Appendix.

A summary of the total Alternative Sediment Control areas is presented on the following table. The total area of the ASCA's is 80.16 acres which represents about 20% of the total disturbed site within the permit area.

ALTERNATIVE SEDIMENT CONTROL AREAS
(ASCA's)

ASCA #	AREA (acres)	DISTURBED AREA 10-Year 24-Hour Runoff Volume (Acre-Feet)	ALTERNATIVE SEDIMENT CONTROL
1	45.00	2.9	Depression storage and straw bales, silt fences or erosion control waddles.
2	9.41	0.4	Silt fence, straw bales or erosion control waddles.
3	12.64	0.3	Silt fence, straw bales or erosion control waddles.
4	7.80	0.04	Silt fence, erosion control waddles or straw bales.
5	2.47	0.1	Berm and silt fence, straw bales or erosion control waddles.
6	0.35	0.02	Straw bales silt fences or erosion control waddles.
7	2.52	0.24	Berm around topsoils stockpile; remainder of area uses silt fences, straw bales, berms, erosion control waddles, and/or gouges.
TOTAL	80.16	4.00	

A typical installation guide of the erosion control waddle, silt fence and straw bale barrier is provided on the following sheets.

The Operator may also elect to excavate sediment traps at sediment control inlets and/or outlets. The minimum size for the sediment traps, if used by the Operator, shall be 2 feet by 2 feet by 6 inches deep. Erosion control measures will be inspected, cleaned and repaired following significant rainfall events and at no time will be non-functional or ineffective in preventing additional contribution of suspended solids to the stream flow or runoff outsite the permit area.

Straw bales, silt fences and/or erosion control waddles will be used in within and adjacent to the ASCA's and other areas as shown on the Hydrologic Evaluation Map (F9-177). As a means to control erosion near and around the Siaperas Ditch area at the Wellington site, silt fences, straw bales, erosion control waddles and/or gouges will be used. "Gouging" the ground surface is a method used to control runoff sediments and erosion as well as to harvest water by the creation of small basins resulting in microenvironments that can also be used to enhance revegetation success of reclaimed lands in the semi-arid West. These gouges, or micro-basins, can be created by specially designed heavy equipment, as well as by using more common equipment such as a backhoe or trackhoe. The recommended depth for the micro-basins is 18 to 24 inches, with a recommended width that can be equal to the size of the backhoe bucket (*The Practical Guide to Reclamation*, State of Utah, Division of Oil, Gas & Mining, Salt Lake City, UT).

The gouges will be created at the specifications mentioned above. The finished surface would consist of at least 50% basins, meaning at least half of the surface area will consist of the gouges; their average depths will exceed 18 inches. Taken from the same reference cited above, using a random and overlapping pattern should make it impossible for water to flow downslope with a slope of 1h:1.5v (the Siaperas Ditch area is much less than this slope angle).

Taken from the Western U.S. Precipitation Frequency Maps published in 1973 (NOAA, Atlas 2, HDSC/NWS, Office of Hydrology, Silver Spring, MD) and using the 10-year, 24-hour precipitation event of 1.8 inches, and with an effective basin area of 50% of the total surface area, the depth of water in the micro-basins would be only 3.6 inches (this assumes absolutely no infiltration to the existing soils). Thus, with proper construction of gouges in the area, there would be no runoff at all from this precipitation event. That said, clean-out or reconstruction of the gouges would occur only if the average basin depths were to decrease by natural weathering processes to less than 3.6 inches.

Similarly, using the much larger 100-year, 24-hour precipitation event of 2.6 inches and the same 50% basin area, the depth of water in the depressions would only be 5.2 inches. Using an even more conservative scenario, if the basin area were to make up only 1/3 of the total surface area, the water depth in the gouges would be only 7.8 inches, which is less than half full of their capacity.

Storm water runoff in the SMCRA-permitted area west of the Price River Terminal will be managed using a sediment pond (Plant Sediment Pond), ditches, silt fences, erosion waddles and/or straw bales. Surface-water runoff from undisturbed areas will be routed around disturbed areas using ditches. Surface-water runoff from the SMCRA-permitted area will be isolated from adjacent industrial areas at the Price River Terminal facility through the use of berms.

7.53 IMPOUNDMENTS AND DISCHARGE STRUCTURES (R614R645-301-753)

The Price River Terminal Wellington Preparation Plant facility will conform with performance standards outlined in R614R645-301-750 through R645614-301-755 of the state regulations.

7.54 PERFORMANCE STANDARDS (~~R614~~R645-301-754)

The Price River Terminal facility ~~Wellington Preparation Plant~~ will conform with performance standards outlined in ~~R614~~R645-301-750 through ~~R614~~R645-301-755 of the state regulations.

7.55 CASING AND SEALING OF WELLS (~~R614~~R645-301-755)

The Price River Terminal facility ~~Wellington Preparation~~ Plant will continue to conform with performance standards outlined in R645~~614~~-301-750 through ~~R614~~R645-301-755 of the state regulations.

7.60. RECLAMATION

See Section 5.40 for reclamation plan description.

7.62.1 thru 7.62.2 DESCRIPTION OF POST MINING DRAINAGE

West of Price River

During reclamation, all structures and facilities will be removed and the surface graded to the configurations shown on E9-3342.:

Approximately 310 acres drain through the northwest end of the permit area (Watershed #1, see Volume II – Hydrologic Appendix and Drawing G9-3504), to the Price River. The area presently disturbed by the Operator is minimal compared to the entire drainage area. Topsoil Borrow Area B is located in this watershed. The surface of the area will be graded as shown on E9-3342 (including the grading of the diversion ditch) and revegetated. Sediment treatment will be provided through continued use of strawbale barriers adjacent to the railroad culvert inlets.

Culverts beneath the plant railroad system will be removed and the surface regraded to maintain drainage to the culverts beneath the D&RG Railroad Mainline. The fills constructed for the plant railroad system will be contoured to blend to surrounding areas. The Dryer Sediment Pond will provide final treatment for runoff from Watershed #4 during reclamation activities. When reclamation is considered successful in accord with the success standards, the decant structure for the Dryer Sediment Pond will be removed and the pond graded to blend with surrounding areas and revegetated.

Watersheds #5 and #6 include the Plant Sediment Pond and outlet channel. The Plant Sediment Pond and outlet channel will be maintained to provide treatment during reclamation. When reclamation is considered successful in accord with the success standards, the Plant Sediment Pond and outlet ditch will be graded to the configuration shown on E9-3342, where all drainage will pass through the culverts under the D&RGW mainline. The dike for the Plant Sediment Pond will be graded to blend with surrounding areas and a reclamation channel will be constructed through the area of the Plant Sediment Pond to convey storm runoff from tributary areas past the Refuse Pile. Hydrologic and design computations for the proposed reclamation channel are provided in the Hydrologic Appendix Watershed #5.

Drainage around the reclaimed plant refuse pile will be provided on the northwest by a reclamation ditch through the existing location of the Plant Sediment Pond, on the northeast by Ditch DD-4, and on the southwest by a reclamation channel along the toe of the refuse pile. As shown on Drawing 536a, the surface of the ground around the reclaimed plant refuse pile will be sloped away from the pile to the reclamation ditches to prevent ponding at the toe of the pile. Design computations are provided in Hydrologic Appendix Watershed #6.

East of the Price River

When the Upper and Lower Refuse Basin is reclaimed, two diversion ditches will channel the runoff from undisturbed areas around the regarded surface (Watershed #10 and Watershed #7, as shown on Drawing 536a), the surface of the ground around the reclaimed plant refuse pile will be sloped away from the pile to the reclamation ditches to prevent ponding at the toe of the pile. Design computations are provided in Hydrologic Appendix Watershed #6.

East of the Price River

The topsoil borrow plan has been determined by two different methods. A worst-case scenario is included to represent the existing conditions in the permit area as of this date and will be used as the basis of bonding calculations. This scenario affects the final drainage and is shown by a series of cross sections of the ditches and borrow areas in Drawings 2.41-A1, 2.41-B1, 2.41-B2, 2.410-C1, 2.41-C2, and 2.41-D1. A best-case scenario is also included to account for the approved fines removal operations in the slurry ponds ~~of Covol's wash plant and refuse pond mining plan~~. This scenario serves as the basis for the release of a part of the permit which formerly contained one of the previous potential topsoil borrow areas. Together, these methods will provide for whichever is the final reclamation plan for the permit area.

When the Upper and Lower Refuse Basin is reclaimed, two diversion ditches will channel the runoff form undisturbed areas around the regarded surface (Watershed #10 and Watershed #7, see Volume II – Hydrology Appendix). These two ditches are labeled Permanent Diversion (located along the east side of the Upper Refuse Basin) and Lower Refuse Basin Diversion Ditch on drawing E9-3342.

The Permanent Diversion ditch is an existing ditch which conveys drainage water around the Upper Refuse Basin to the Siaperas Ditch. During reclamation, of the worst-case scenario, topsoil will be salvaged from Area D, through which the Permanent Diversion currently passes, so the cross-sectional configuration and flowline of the ditch will change. The resultant cross section will be triangular, with very shallow side slopes over most of the length of the ditch. During the design event, 161 cfs, the flow width will be about 222 feet, with a maximum depth at about 0.8 feet. During more frequent, butt lesser events, flow widths and depths will be substantially less. At the upper end of the Permanent Diversion where the channel transitions up to the natural drainage, gradient will be increased to about 2 percent, with subsequent reductions in flow width and depth. In essence, the flow path will be in an expanding reach as it progresses downstream from the natural channel, through the steepened reach, and toward the Siaperas ditch.

The Siaperas ditch will also be reconfigured as necessary to accommodate topsoil borrow operations from Area E. Its flow path will essentially begin a gradual contraction progressing toward the lower (west) end where the Siaperas Ditch will not be altered during borrow or reclamation operations. During the design event, 345 cfs, the flow width will range from 161 feet on the east to 41 feet on the west. During all events, however, the reconfigured flow paths of the Permanent Diversion and the Siaperas Ditch will continue to direct runoff toward the north and t hen west, away from, and around, the Upper Refuse Basin, and will prevent runoff from contacting reclaimed refuse materials. The wide, shallow flow paths and the shallow cross section slopes will be revegetated with plants that are suited to higher precipitation zones which thrive.

When there is additional moisture. Silt fences will be placed parallel to the channels to provide sediment control.

Design velocities in all reconstructed reaches will be non-erosive, less than or equal to 4.21 fps. The design for the transition between the Permanent Diversion and the natural channel tributary is shown on Drawing 2.41.D1. The rock will be graded with a d_{50} of about one foot; it will be placed to conform with the channel cross section, and will extend up the channel banks to a minimum depth of two feet. Excavation will occur prior to rock placement as needed to maintain the channel's capacity. The necessity for filter blanket will be determined during reclamation, and will be based upon the particle size of the substrate. The effectiveness of the rock in regard to minimizing headcutting will be monitored until bond release. Maintenance will be performed as necessary to protect the undisturbed channel from excessive erosion, and to protect the adjacent reclaimed areas.

The Lower Refuse Basin Diversion Ditch is a permanent diversion proposed to channel runoff from the undisturbed area away from the reclaimed Lower Refuse Basin surface (see computations in Watershed #7 for Volume II – Hydrology Appendix). This ditch will outlet into the Clear Water Pond during revegetation of the Upper and Lower Refuse Basin so that the impoundment can be maintained for sediment treatment during revegetation. When revegetation is successful, the Clear Water Pond will be reclaimed (see Drawing E9-3347) and the diversion ditch channel extended to discharge directly into the Price River. During revegetation of the regraded Clear Water Pond area, strawbale barrier (or equal sediment filter) will be maintained until successful stand of vegetation is established.

The surface of the refuse disposal area (coarse slurry pile, Upper Refuse Basin, and Lower Refuse Basin) will be regraded as shown on Drawing E9-3342 to promote drainage and revegetation. The final reclaimed surfaces are designed to be stable with acceptable erosion rates (see soil loss estimates in the Hydrologic Appendix).

~~The Pumphouse and deep well will be demolished, graded and revegetated in accord with the plan. Strawbale barrier (or equal sediment filter) will be maintained until successful strand of vegetation is established. Once revegetated, the sediment filter will be removed and surface runoff will course into the Price River. After the Clear Water dike is graded, surface runoff will pass through a culvert under the county road to the Price River.~~

Revegetation success standards are discussed in the Section 3.41. The Operator will sample surface water inflows into sediment control structures. When inflows meet effluent limitations and revegetation is considered successful, sediment control structures will be removed.

The area is generally flat both east and west of the Price River. When sediment control structures are removed, surface runoff will course toward the Price River from all areas.

All runoff from the reclaimed areas west of the river must pass through culverts under the D&RGW mainline. Because the area is flat, flow velocities are not expected to be significant. Drainage channels are expected to be stable and erosion will not be significant.

7.65. PERMANENT CASING AND SEALING OF WELLS.

———When no longer needed for monitoring or other use approved by the Division each well will be capped, sealed, backfilled, or otherwise properly managed, as required in accordance to R645-303-529.400, 631.100 and 748. Closure will prevent access to the abandoned well casing by people, livestock, fish and wildlife, machinery, and will keep acid or other toxic drainage from entering ground or surface waters. Since all wells located in conjunction with the loadout facility are shallow wells deriving water from the shallow water table aquifer, closure will consist of filling the well with clean surface material or cement grout after which the well casing will be removed to a minimum depth of two feet below ground surface.

8.00 BONDING AND INSURANCE

8.10. through 8.11. Terms Used

8.12 through 8.12.7. Division Responsibilities - Bonding.

8.20. through 8.20.1.33. Requirement to File a Bond

The entire disturbed area is bonded. This area is described in Exhibit A of the current Reclamation Agreement. The current bond is filed on the form provided by the Division and is for an amount equal to or exceeding the bond amount previously determined by the Division under R645-301-830. The current bond form and Reclamation Agreement is located in Chapter 1.

8.20.2. through 8.20.3.52 Form of the Performance Bond.

NEICO will continue to use a surety bond to satisfy R645-301-800.

8.30. through 8.30.1.30. Determination of Bond Amount.

The new bond amount is to be determined by the Division.

8.30.1.40. Detailed Cost Estimate

Refer to Appendix J for detailed estimates of the costs of reclamation.

8.30.2. through 8.30.3. Minimum Bond Amount

The Division will review the costs of reclamation. NEICO will provide Reclamation Agreements when appropriate.

8.30.4 through 8.30.5. Adjustment of Amount.

NEICO agrees to re-evaluate the performance bond whenever the permit acreage is revised, standards of reclamation change, or when the cost of future reclamation work changes. The bond amount will be adjusted to reflect these changes as determined by the Division.

8.40. through 8.40.5.20. General Terms and Conditions of the Bond.

The bond held by NEICO meets the General Terms and Conditions.

8.50. through 8.50.3.20. Bonding Requirements.

The bond will remain in full force until the reclamation is completed as outlined in the approved Reclamation Plan. It is not anticipated that the bond will he fully released until the period of extended responsibility for successful revegetation has expired.

8.60. through 8.60.3.80. Forms of Bonds.

The NEICO Bond is Surety Bond.

8.70. through 8.70.2. Replacement of Bonds.

If NEICO replaces its current bond the replacing bond will provide equivalent coverage and conditions.

8.80. through 8.80.9.32. Requirements to Release Performance Bonds.

NEICO commits to meet the requirements of R645-30 1-880. through R645-301-880-932.

8.90. through 8.90.4. Terms and Conditions for Liability.

A copy of NEICO's certificate of liability insurance is contained in Chapter 1.

8.00. BONDING AND INSURANCE (R645-301-800)

The rules in R645-301-800 set forth the minimum requirements for filing and maintaining bonds and insurance for coal mining and reclamation operations under the State Program.

8.10. DEFINITIONS AND TERMS

Terms used in this section as defined by the Division can be found in Administrative Rules R645-100-200.

8.12. DIVISION RESPOSIBILITIES

The Division has prescribed and furnished forms for filing performance bonds at the Price River Terminal facility. Additionally, the Division determined the amount of the bond for each area to be bonded, in accordance with R645-301-830. The Division can also adjust the amount as acreage in the permit area is revised, or when other relevant conditions change according to the requirements of R645-301-830.400. The amount of the bond or deposit required and the terms of the acceptance of the applicant's bond can be adjusted by the Division from time to time as the area requiring bond coverage is increased or decreased or where the cost of future reclamation changes.

8.20. REQUIREMENT TO FILE A BOND

Price River Terminal has submitted a performance bond that covers the entire disturbed areas related to coal mining and reclamation activities in the permit area. The Division has approved this bond.

Price River Terminal has submitted an application for a change in the postmining land use to industrial in a portion of the permit area under R645-301-413.300. If approved by the Division, an application to adjust the bond will then be submitted though the procedures described in R645-301-880.100 through R645-301-880-800.

8.30 DETERMINATION OF BOND AMOUNT

The amount of the bond required for each bonded area was determined by the Division. For a detailed list of cost estimates for reclamation at the Price River Terminal faciliy, refer to Appendix J.

8.40. GENERAL TERMS AND CONDITIONS OF THE BOND

The bond held by Price River Terminal for the Wellington site meets the General Terms and Conditions as listed R645-301-840.

8.50. BONDING REQUIRMENTS AND RESPONSIBILTIES

The bond will remain in full until the reclamation has been completed as outlined in the approved Mining and Reclamation Plan or until portions of the permit area has been approved for bond release.

8.60. FORMS OF BONDS

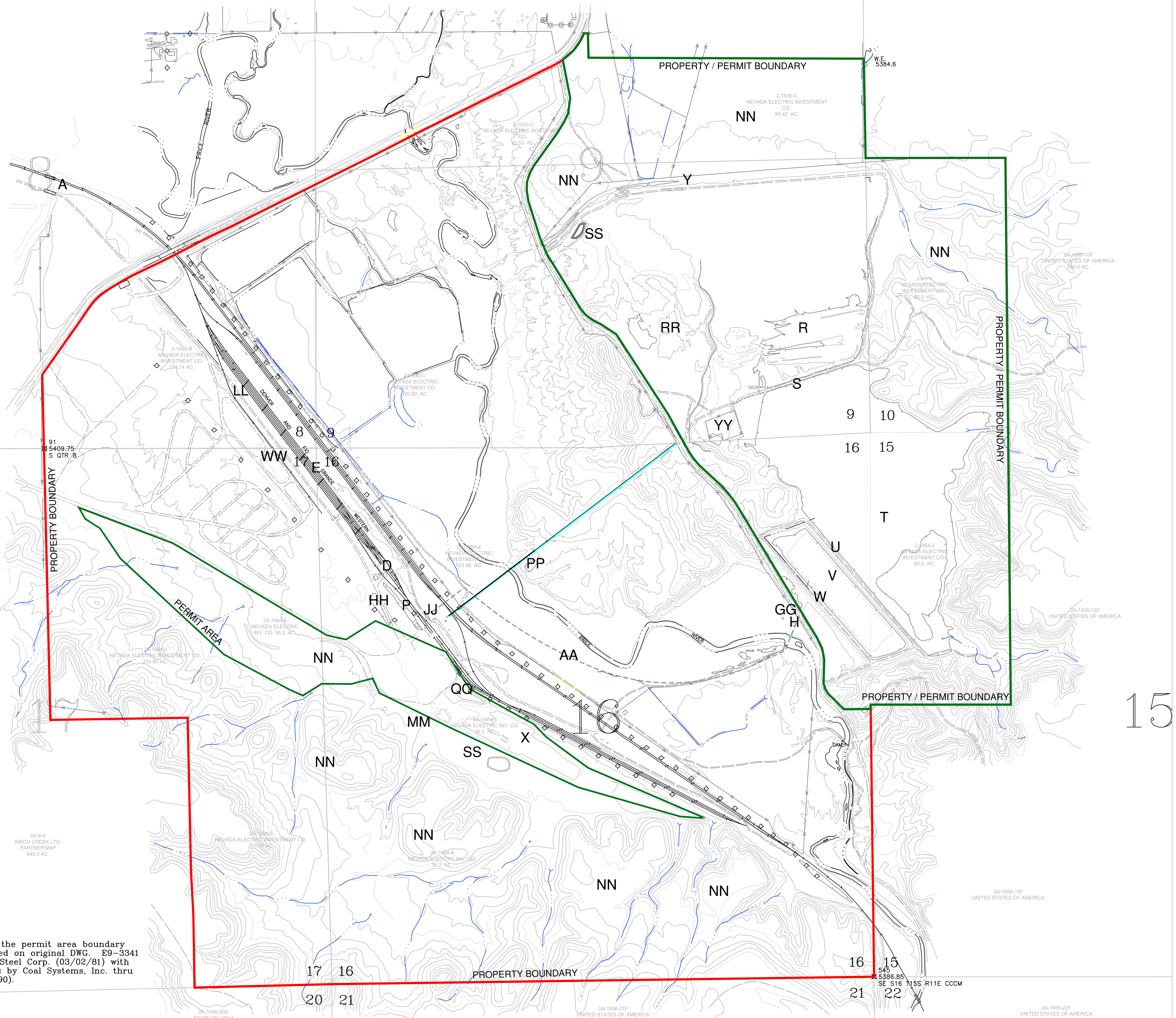
Price River Terminal's approved bond for the Wellington site is a Surety Bond.

8.70. REPLACEMENT OF BOND

The Division may allow a permittee to replace existing bonds with other bonds that provide equivalent coverage. Price River Terminal will provide an adequate bond if the current bond in replaced.

8.80. BOND RELEASE

Price River Terminal has submitted an application for change the postmining land use to industrial in a portion of the permit area under R645-301-413.300. If approved by the Division, an application to adjust the bond will then be submitted though the procedures described in R645-301-880.100 through R645-301-880-800.



NOTE:
Most of the permit area boundary was based on original DWG. E9-3341 by U.S. Steel Corp. (03/02/81) with revisions by Coal Systems, Inc. thru (07/05/90).

EXISTING FACILITIES

A. BRIDGE
D. TRACK HOPPER/RAW COAL CONVEYOR
E. PLANT RAILROAD SYSTEM
P. AUXILIARY POND
R. UPPER REFUSE BASIN
S. UPPER REFUSE DIKE
T. LOWER REFUSE BASIN SEDIMENT POND
U. LOWER REFUSE DIKE
V. CLEARWATER POND
W. CLEARWATER DIKE
X. COARSE REFUSE PILE
Y. SIAPERAS DITCH

AA. CLEARWATER PIPELINE (FROM PREV. DWG. E9-3341 CERT. 06/28/84)
GG. RIVER WATER COLLECTION WELL
HH. ROAD POND
JJ. DRYER POND
LL. NATURAL GAS PIPELINE
MM. DIVERSION DITCH (UD-1 & UD-1A)
NN. TOPSOIL BORROW AREAS
PP PIPELINE SLURRY SEDIMENT POND
QQ. PLANT SEDIMENT POND
RR. COARSE SLURRY POND REFUSE PILE(TEMPORARY)
SS. TOPSOIL STOCKPILE
WW. TRANSLOADING AREA

FACILITIES REMOVED DURING RECLAMATION - NO LONGER SHOWN ON MAP

B. ELECTRIC SUBSTATION
C. COAL CLEANING PLANT BUILDING
F. HEAT DRYER & CONVEYOR
G. SLURRY PIPELINE & SUPPORT STRUCTURES
H. RIVER PUMPHOUSE
I. COURSE REFUSE BIN
J. OFFICE BUILDING
K. STOREHOUSE
L. SHOP
M. COAL CARBONIZATION LAB
N. OIL STORAGE BUILDING
O. PUMPHOUSE
Q. HAUL ROAD
Z. COAL STORAGE, PROCESSING & LOADING AREA

BB. MATERIAL & EQUIPMENT STORAGE AREA
CC. SCRAP METAL STORAGE AREA
EE. NON-COAL WASTE HOLDING AREA
FF. OIL DRUM STORAGE AREA
II. POND FILL PILE
KK. POND FILL PILE
OO. FUTURE TOPSOIL STRIPPING AREA
TT. TRUCK DUMP
UU. HOPPER AND FEED BELT FOR LOADING
VV. TRUCK SCALE AND SCALE HOUSE
XX. SEPTIC TANK & DRAIN FIELDS (as per USS 11-21-59 E91296)

Surveyors Certificate

I Benjamin A. Grimes, do hereby certify that I am a Registered Professional Land Surveyor holding certificate No. 167246 in accordance with Title 58, Chapter 22 of the Professional Engineers and Land Surveyors Licensing Act of The State of Utah. I further certify that this map has been prepared under my direct supervision and that the information shown hereon is correct and accurate to the best of my knowledge and information. Portions of the map were prepared by U.S. Steel Corp. (03/02/81) with revisions by Coal Systems, Inc. through (07/05/90), and revisions by Mt. Nebo Scientific through (2/13/15).
I further certify that I have checked the public land survey section corners and quarter section corners and property ownership information on file at the Carbon County Recorder's Office and that this information is correct and accurately portrayed on this map.

BENJAMIN. A. GRIMES, P.L.S. #167246

REGISTERED LAND SURVEYOR
167246
BENJAMIN A. GRIMES
STATE OF UTAH

0 50 100
Feet

N

REVISIONS	BY	DATE
UU, TT, VV	L.W.J	12/3/93
XX, LABELS	J.J.M.	4/28/94
YY, UTILITIES	T.L.	9/10/97
NN, TOPSOIL BORR. AREAS	C.L.P	11/4/97
FACILITIES & PERMIT AREAS	J.S.	11/04/98
Add CW Pipeline/Update Boundary and Reclamation Areas	P.D.C.	10/17/06
Legend/Map Corrections on the Covol Plant and River Pump House Areas	Blackhawk	3/26/08
Add Topsoil Pile Locations	Blackhawk	10/31/12
Add Transloading Area	Blackhawk	11/22/13
Revise Dist. Area Lines & SMCRA Areas	Mt. Nebo	02/xx/15

Permit Area, Facilities Map

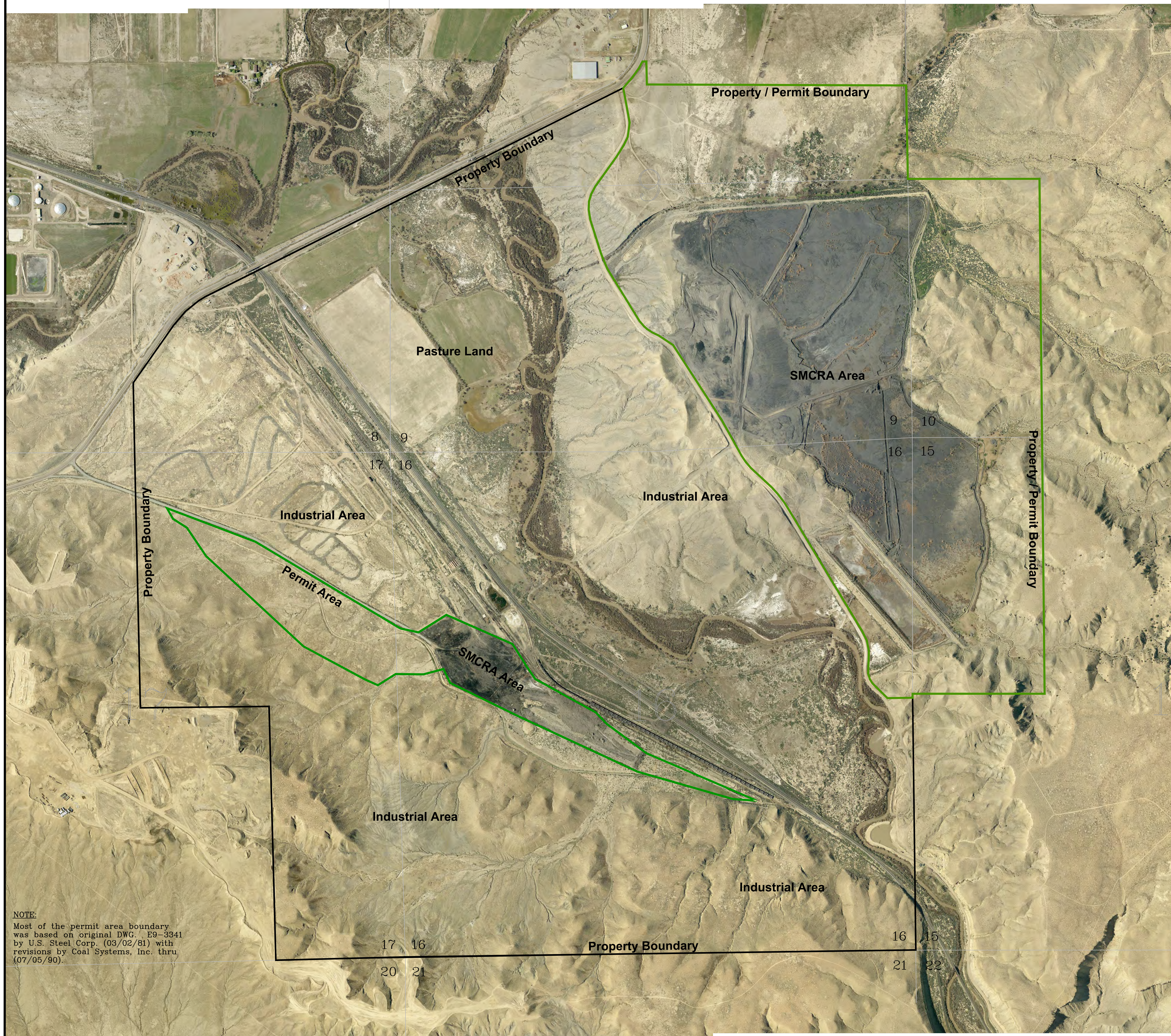
Wellington Prep Plant

PRT
Price River Terminal
Fort Worth, Texas

MT. NEBO SCIENTIFIC, INC.
RESEARCH AND CONSULTING

DRAWN B.G.
CHECKED P.C.
DATE March, 2015

E9-3341



NOTE:
Most of the permit area boundary was based on original DWG. E9-3341 by U.S. Steel Corp. (03/02/81) with revisions by Coal Systems, Inc. thru (07/05/90).

0 1000 2000 Feet

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BENJAMIN. A. GRIMES, P.L.S. #167246

REGISTERED LAND SURVEYOR
167246
BENJAMIN A.
GRIMES
STATE OF UTAH

REVISIONS	BY	DATE

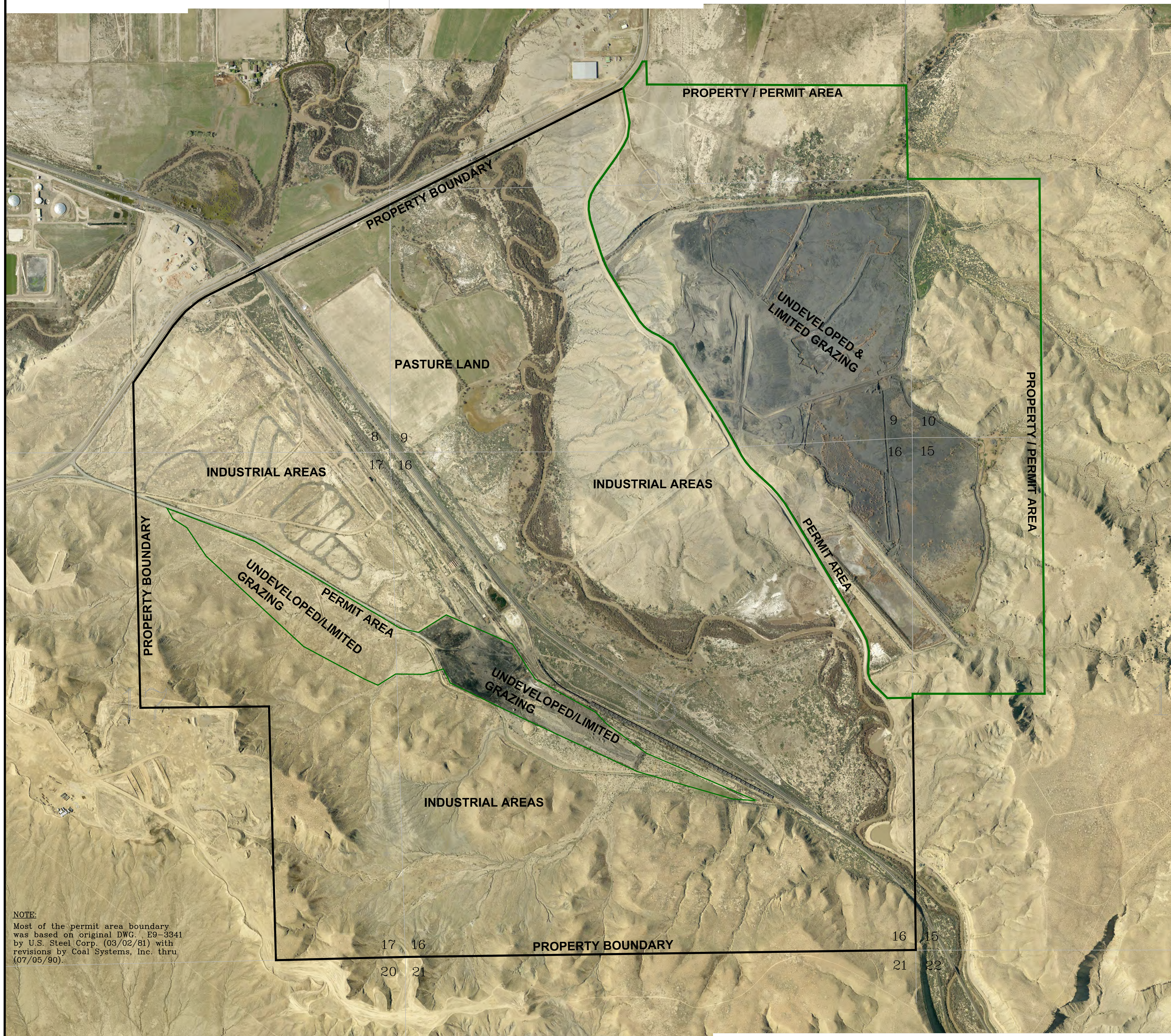
Current Land Use Map

Wellington Prep Plant

PRT
Price River Terminal
Fort Worth, Texas

MT. NEBO SCIENTIFIC, INC.
RESEARCH AND CONSULTING

DRAWN	B.G.	E9-3343(1)
CHECKED	P.C.	
DATE	March, 2015	
SCALE	1"=500'	



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BENJAMIN. A. GRIMES, P.L.S. #167246

REGISTERED LAND SURVEYOR
167246
BENJAMIN A. GRIMES
STATE OF UTAH

0 500 1000
Feet

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REVISIONS	BY	DATE

Postmining Land Use

Wellington Prep Plant

PRT
Price River Terminal
Fort Worth, Texas

MT. NEBO SCIENTIFIC, INC.
RESEARCH AND CONSULTING

DRAWN	B.G.
CHECKED	P.C.
DATE	March, 2015
SCALE	1"=500'

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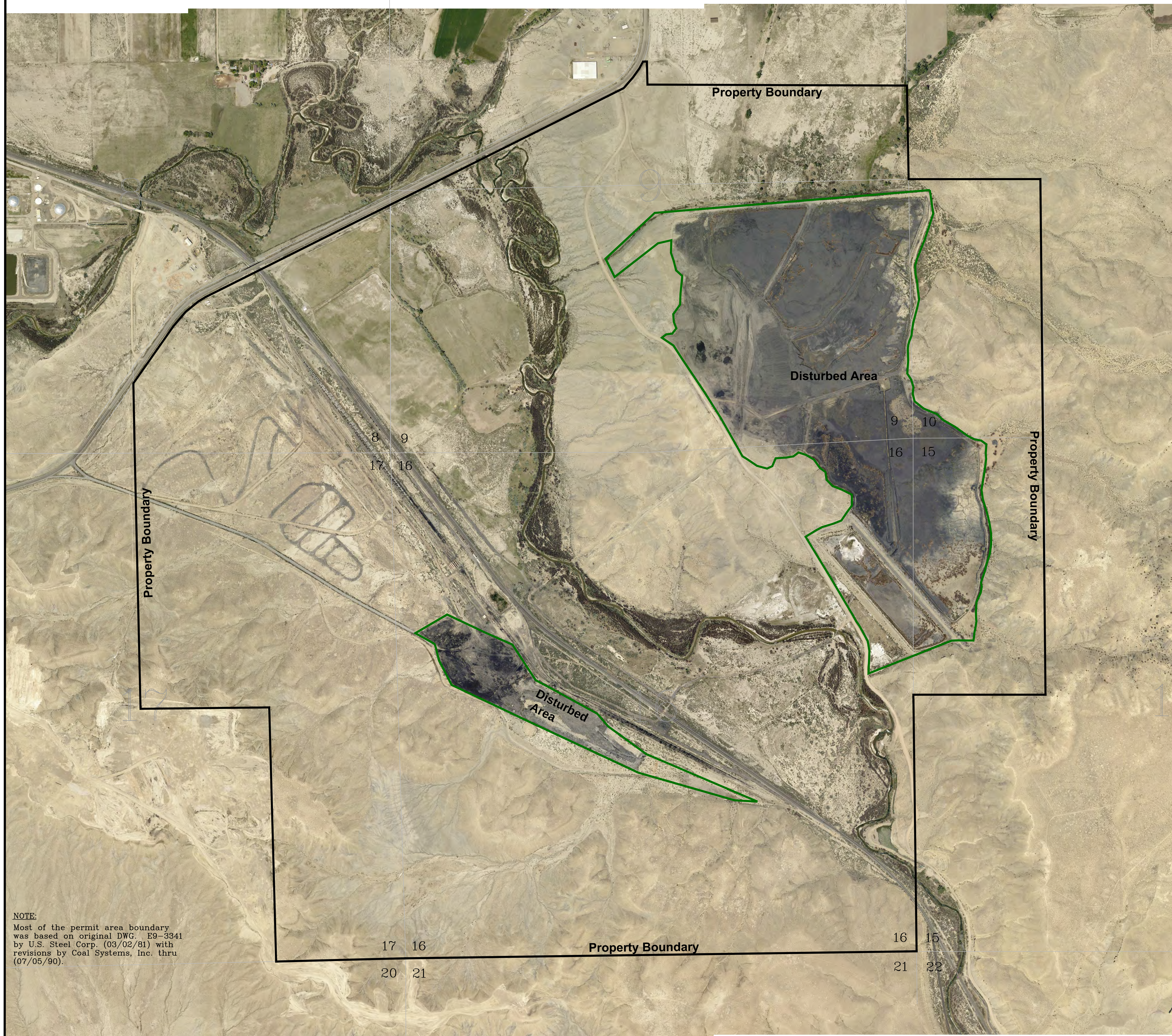

NOTE:
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Surveyors Certificate

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I further certify that I have checked the public land survey section corners and quarter section corners and property ownership information on file at the Carbon County Recorder's Office and that this information is correct and accurately portrayed on this map.

BENJAMIN. A. GRIMES, P.L.S. #167246

PROFESSIONAL LAND SURVEYOR
167246
BENJAMIN A.
GRIMES
STATE OF UTAH

0 500 1000
Feet

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REVISIONS	BY	DATE

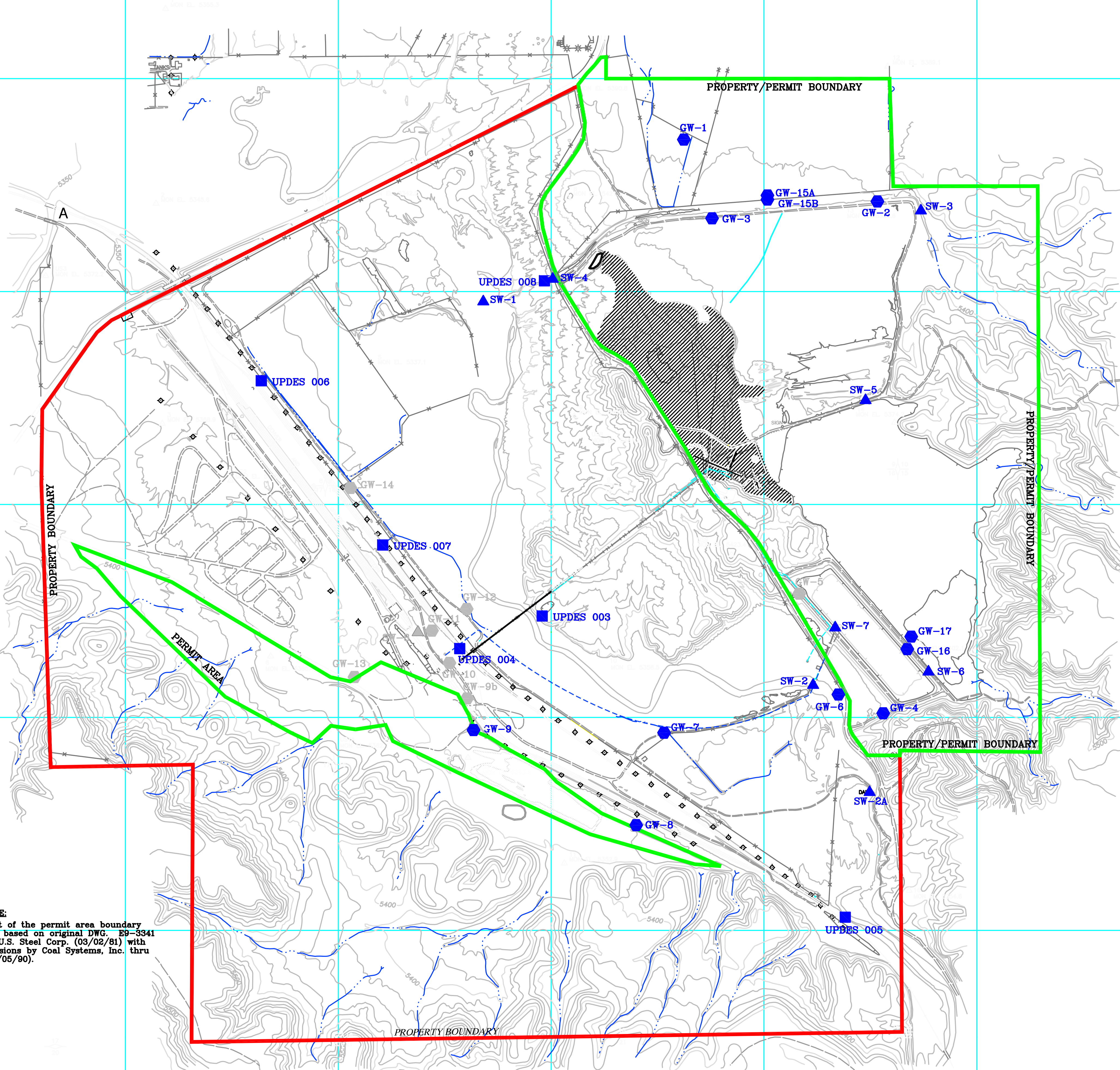
Disturbed Areas
Wellington Prep Plant

PRT
Price River Terminal
Fort Worth, Texas

MT. NEBO SCIENTIFIC, INC.
RESEARCH AND CONSULTING

DRAWN	B.G.
CHECKED	P.C.
DATE	March, 2015
SCALE	1"=500'

E9–3333



NOTE:
Most of the permit area boundary was based on original DWG. E9-3341 by U.S. Steel Corp. (03/02/81) with revisions by Coal Systems, Inc. thru (07/05/90).

LEGEND

- GROUNDWATER MONITORING SITE (GW-1)
- SURFACE WATER MONITORING SITE (SW-1)
- UPDES DISCHARGE POINT (UPDES – 003) (SW-1)
- HISTORIC GROUNDWATER MONITORING SITE (GW-5) (NOT MONITORED)

LICENSED PROFESSIONAL GEOLOGIST
5373615-2250
ERIK C. PETERSEN
STATE OF UTAH

This map (drawing) is based on previous engineering permit information and information provided by others and is accurate to the best of my knowledge.

REVISIONS	BY	DATE

HYDROLOGIC MONITORING MAP

PRICE RIVER TERMINAL

MT. NEBO SCIENTIFIC, INC.
RESEARCH AND CONSULTING

DRAWN	E. PETERSEN	E9-3451
CHECKED		
DATE	03-24-2015	
SCALE	1"=500'	

PUBLIC NOTICE

Notice is hereby given that Price River Terminal, LLC, permittee of the Wellington Preparation Plant (C/007/0012), is submitting an application to change in the postmining land use to "Industrial" for a portion of the permit area. The application has been submitted through the State of Utah, Division of Oil, Gas & Mining under the provisions of State Rules R645-301-413. The permittee mailing address is shown below.

PRICE RIVER TERMINAL, LLC
3215 West 4th Street
Fort Worth, Texas 76107

The permit area is located at 6000 Wash Plant Road, Wellington, Utah in Carbon County. The property description is shown below.

Township 15 South, Range 11 East, Salt Lake Base and Meridian:
Section 8 E ½ SE ¼ (portions south of Ridge Road),
W ½ SE ¼ (portions south of Ridge Road, excluding portion n. of railroad tracks),
Section 9 S ½, portions of S ½ N ½,
Section 10, W ½ SW ¼,
Section 15 W ½ NW ¼,
Section 16 (all)
Section 17 E ½ SE ¼, NE ¼.

A map of the area proposed for the postmining land change and revised permit area has been attached.

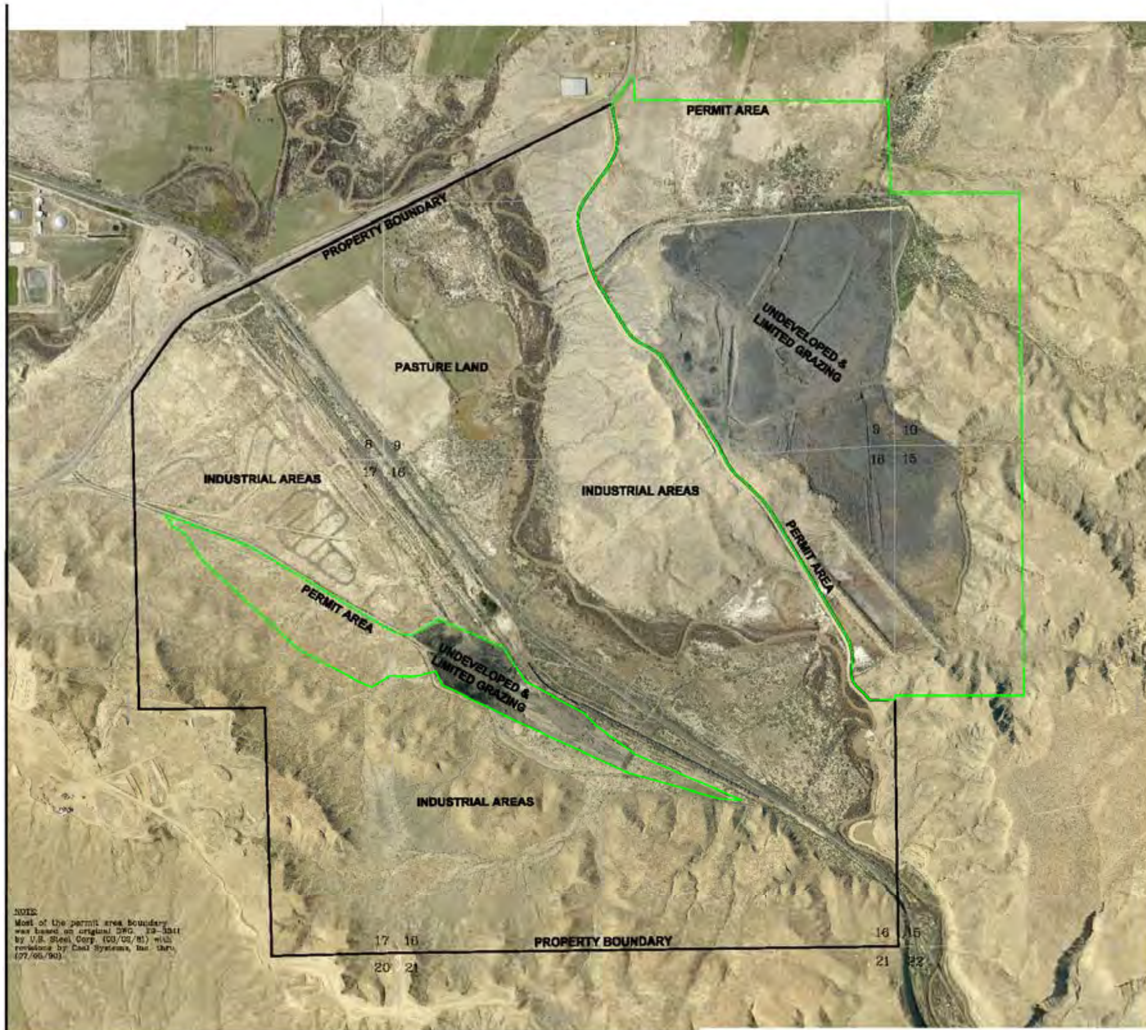
The application for Wellington Preparation Plant Mining & Reclamation Plan (MRP) can be reviewed at the following address. Written comments, objections, or requests for an informal conference may be submitted to the Division of Oil, Gas and Mining at the address below. Said comments must be submitted within 30 days from the date of the last publication of this notice.

STATE OF UTAH
Division of Oil, Gas & Mining
1594 West No. Temple, Suite 1210
Salt Lake City, UT 84114-5801

The application for permit renewal will also be available for review at the Carbon County courthouse at following address:

CARBON COUNTY
120 East Main Street
Price, UT 84501

This Public Notice to be published in the Sun Advocate on the following dates _____________.



REVISIONS	BY	DATE

Postmining Land Use

Wellington Prep Plant

PRT Price River Terminal

MT. NEBO SCIENTIFIC, INC.
RESEARCH AND CONSULTING

DRAWN	B.G.	412.01
CHECKED	P.C.	
DATE	Feb, 2015	
SCALE	1"=500'	