ANDALEX
RESOURCES, INC.

P.O. Box 910, East Carbon, Utah 84520
Telephone (435) 888-4000 Fax (435) 888-4002

Utah Division of Oil, Gas & Mining
Utah Coal Program
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, UT 84114-5801

August 28, 2019

Attn: Steve Christensen
Permit Supervisor

Re: Andalex Resources, Inc. C/007/019
T19-003 Midterm Response

Dear Mr. Christensen,

Attached you will find the deficiency responses to the Centennial Midterm Review, Task #5937. Changes have been made to Chapters 1 and 2, as well as to Appendices AA and 1-3. Bonding calculations have been adjusted as requested.

If you have any questions, or need any additional information regarding this renewal, please contact me directly at 435-888-4000.

Sincerely,

Karin Madsen
Engineering Tech
UtahAmerican Energy, Inc.

APPLICATION FOR PERMIT PROCESSING

Permit Change X	New Permit ☐	Renewal ☐	Transfer ☐	Exploration ☐	Bond Release ☐	Permit Number: ACT/007/019
Title of Proposal: T19-003 Midterm Review Task ID #5937						Centennial Coal Mine
						Permittee: UtahAmerican Energy, Inc.

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

Instructions: *If you answer yes to any of the first 8 questions (gray), submit the application to the Salt Lake Office. Otherwise, you may submit it to your reclamation*

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

X **Attach 1 complete digital copy of the application.** In PDF Format

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.

- Karin Madsen - Engineering Tech 8-28-19
Signed - Name - Position - Date

Subscribed and sworn to before me this 28 day of August, 20 19

Teresa Behunin
Notary Public

My Commission Expires: October 26, 2022
Attest: STATE OF Utah
COUNTY OF Carbon

Notary Public - State of Utah
TERESA BEHUNIN
Comm. #703081
My Commission Expires
October 26, 2022

Received by Oil, Gas & Mining

ASSIGNED TRACKING NUMBER

Application for Permit Processing
Detailed Schedule of Changes to the MRP

Title of Proposal: T19-003 Midterm Review Task ID #5937

Permit Number: ACT/007/019

Mine: Centennial Mine

Permittee: UtahAmerican Energy, Inc.

Provide a detailed listing of all changes to the mining and reclamation plan which will be required as a result of this proposed permit application. Individually list all maps and drawings which are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages, or other information as needed to specifically locate, identify and revise the existing mining and reclamation plan. **Include page, section and drawing numbers as part of the description.**

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☐ REPLACE	☐ REMOVE	Chapter 1 pages: 6, 7, 9, and 12-20.
☐ ADD	☐ REPLACE	☐ REMOVE	Appendix AA
☐ ADD	☐ REPLACE	☐ REMOVE	Chapter 2 pages:
☐ ADD	☐ REPLACE	☐ REMOVE	Bonding Calculations
☐ ADD	☐ REPLACE	☐ REMOVE	Appendix 1-3: Violation Information
☐ ADD	☐ REPLACE	☐ REMOVE	Plate 6 – Surface Facilities in Deadman Canyon (revised) Plate 37 – Top Soil Storage Piles (revised) Plate LF-1 – Left Fork Fan Site (no change – for reference only)
☐ ADD	☐ REPLACE	☐ REMOVE	Appendix AA Figures: Figure 1 – Lease Relinquishments Map Figure 2 – Current Permit Area
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
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☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	

Any other specific or special instructions required for insertion of this proposal into the Mining and Reclamation Plan?

WordPerfect Document Compare Summary

Original document: K:\Tower\2019\T19-003 Midterm Task ID 5973\Text\Originals\Chapter 1.wpd
Revised document: K:\Tower\2019\T19-003 Midterm Task ID 5973\Text\Chapter 1 Edits.wpd
Deletions are shown with the following attributes and color:
~~Strikeout~~, Blue RGB(0,0,255).
Deleted text is shown as full text.
Insertions are shown with the following attributes and color:
Double Underline, Redline, Red RGB(255,0,0).

The document was marked with 72 Deletions, 77 Insertions, 0 Moves.

ANDALEX RESOURCES, INC.

CENTENNIAL PROJECT

MINING AND RECLAMATION PLAN

CHAPTER 1, LEGAL

CHAPTER 1, LEGAL

R645-301-100. GENERAL

The Mathis Tract and new Federal Summit Creek Lease Boundary Change is simply an extension of our underground mine workings and will in no way involve any new surface facilities or otherwise have any affect on the surface. It does not involve any new hydrologic basins. Refer to R645-301-200 through R645-301-800 for additional information.

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

Legal, Financial, Compliance and Information

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

Please note that right-of-entry information for all new Leases is included in Appendix J, "Other Approvals". This includes the short form of the Mathis lease recorded at Carbon County.

Compliance Information

a) Suspension and Revocation

Andalex Resources, Inc., affiliates or persons controlled by or under common control with Andalex haven't had a mining permit suspended or revoked within the last five years.

b) Forfeiture of Bond

Andalex Resources, Inc., affiliates or persons controlled by or under common control with Andalex have not forfeited a mining bond or similar security in lieu of bond.

c) History of Violations

Appendix 1, Part 3 contains a listing of all violations received within the last three years prior to the date of this application by Andalex and affiliated companies.

R645-301-111. INTRODUCTION

Overview and Summary of Project

Mining operations at the Pinnacle Mine began in the Gilson Seam on October 3, 1980, according to the Mining and Reclamation Plan approved by the State of Utah, Department of Natural Resources, Division of Oil, Gas, and Mining. The mining began on the Zion's fee lease and extended onto Andalex's federal leases according to federal approval granted in 1982. Andalex also opened the Apex Mine in the Lower Sunnyside Seam late in 1982. Mining commenced in the Aberdeen Mine in the Aberdeen Seam in mid 1988. The coal is classified as High Volatile B bituminous in the Lower Sunnyside and Gilson Seams and as High-volatile A bituminous in the Aberdeen Seam.

The mine plan area is located approximately 10 miles north-northeast of Price, Utah in Carbon County in T12 and 13S and R10 and 11E (See Figure 1-2. The mining property contains approximately 6528.83 acres. Of this, 1081.5 acres are fee surface and coal leased from the following: Zion Security Corporation (200 acres), Mathis (640 acres), Sunedco (200 acres), Andalex Resources fee (40 acres), and David Cave (1.5 acres). An additional 5435.88 acres are federal leases, consisting of SL-027304 (235.96 acres), SL-063058 (400 acres), U-0l0581 (1,842.39 acres), U-05067 (360 acres), UTU-66060 (1093.32 acres), UTU-69600 (801.48 acres) and UTU-79975 (702.73 acres). The remaining 11.45 acres are BLM surface rights-of-way #62045 (10 acres) and #64158 (1.45 acres). Please see Figure 1-2 and Figure 1-2(A).

This property is located in the Book Cliffs coal field and includes Alrad Canyon, Deadman Canyon, Starpoint Canyon, Straight Canyon, and Hoffman Creek Canyon areas with coal outcropping along the cliffs between 7,000 feet and 7,700 feet elevations. The topography is very rugged, the Book Cliffs being dissected by box canyons created by ephemeral streams. Large sandstone boulders eroded from the cliffs are scattered along the sides of the canyons. The land is undeveloped, used primarily for grazing, and there are no areas of national importance in the region. Mountain-Brush vegetative type covers most of the area.

There are no perennial streams or bodies of water on the property. Ground water recharge is from precipitation in the vicinity. Water supply for mine development is from water encountered in the existing underground mine workings. Culinary usage is supplied by an independent contractor who hauls Price City culinary water to the mine on an as-needed basis. Historically, coal mining has been the only industry in the permit area and there are several abandoned mines located on the

property. No oil or gas wells exist in the area.

Access to the mine plan area is by way of the Airport Road, an existing paved county road which has been upgraded and is maintained by Carbon County. It is used as an access road as well as a haul road. All surface and support facilities necessary for present operations have been completed and are located on the Zion's fee or on rights-of-way granted by the Bureau of Land Management. This is also a small private easement granted to Andalex from David Cave for a small portion of pond E. Andalex has acquired all applicable state and federal licenses, permits, and rights-of-way necessary to conduct mining activities on all private (fee) and federal leases.

As of 7-6/2007 the Apex Mine and the Pinnacle Mine have been worked out. The Apex Mine has been sealed at the portals. The Pinnacle mine is still being ventilated because the power to the Aberdeen mine runs into the Pinnacle mine from the substation and then drops down to the Aberdeen Mine through a borehole connecting the two mines. However, there are no plans to produce any more coal from the Pinnacle Mine. Therefore, all existing and future mine production from the Centennial Project will be solely from the Aberdeen Mine

The mining method being employed in the Aberdeen Mine is gateroad development utilizing continuous miners with final extraction by longwall. Certain fringe area reserves, inadequate for longwall panels, will be by room-and-pillar method.

This operation does not face any of the mining complications caused by faults or intrusives. The mine plan area is located in a region where mining has been the major industry; therefore, the nearby communities are geared for coal operations. The labor supply is excellent and well trained. With these considerations, and Andalex's prudent management, the Centennial Project will continue to be a model mining operation in the Carbon County area with very minimal environmental and socioeconomic impact.

Upon cessation of final mining activities, reclamation activities will commence as soon as is practicable, according to the plans outlined in this application. The land will be restored according to available technology to as nearly its original condition as is possible.

Organization of Application

This underground mining permit application has been organized in accordance with the general requirements for format and contents as outlined in the R645- Coal Mining Rules.

R645-301-111.100. OBJECTIVES

Objectives

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

Please note that right-of-entry information for all new Leases is included in Appendix J, "Other Approvals".

R645-301-111.200. RESPONSIBILITY

Andalex Resources, Inc., is responsible for submission of information and will pay abandoned mine reclamation fees.

R645-301-111.300. APPLICABILITY

The requirements of R645-301-100 apply to Andalex Resources, Inc.

R645-301-112. IDENTIFICATION OF INTERESTS

a) Permit Applicant

Andalex Resources, Inc. (Employer ID # 61-0931325)
P.O. Box 910
East Carbon, Utah 84520
(801) 888-4000

b) Legal and Equitable Owners of Record

Earth work for the Aberdeen Mine was completed in 1989. Surface facilities for the Aberdeen Mine were completed early in 1990. All existing facilities are located either on land owned by Zions Securities Corporation or on federal land. The addresses of these owners of record are as follow:

Bureau of Land Management (801) 524-3004
Utah State Office
P.O. Box 45155
Salt Lake City, Utah 84145-0155

Zion Securities Corporation (801) 363-3841
10 East South Temple
Salt Lake City, Utah 84111

All coal to be mined on the permit area is owned by the

federal government, Zion Securities Corporation, Sunedco Coal Company or AMCA Coal Leasing, Inc, a wholly-owned subsidiary of UtahAmerican Energy Inc.. The addresses of these owners of record are as follow:

Bureau of Land Management
Utah State Office
P.O. Box 45155
Salt Lake City, Utah 84145-0155

AMCA Coal Leasing, Inc. (Employer No. 61-0914254)
PO Box 910
East Carbon, Utah 84520

Zion Securities Corporation
10 East South Temple
Salt Lake City, Utah 84111

Sunedco Coal Company
7401 West Mansfield Avenue
Suite 418
P.O. Box 35-B
Lakewood, Colorado 80235

R645-301-112.100. TYPE OF BUSINESS

Andalex Resources is a corporation organized and existing under the laws of Delaware and qualified to do business in Utah. Andalex Resources, Inc, is a wholly owned subsidiary of UtahAmerican Energy Inc., which in turn is a wholly owned subsidiary of Murray Energy Corporation, which in turn is a wholly-owned subsidiary of Murray Energy Holdings Co. Andalex began mining operations in the Pinnacle Mine October, 1980, and in the Apex Mine in late 1982. Mining commenced in the Aberdeen Mine in mid-1988. These mines are located on fee and federal lands in Carbon County, Utah. Andalex, the designated operator, along with AMCA Coal Leasing, Inc., its land acquisition and development branch, controls all federal and fee mining leases within the mine plan area. This underground mining permit application has been prepared by Andalex Resources and is being submitted for review and approval by the appropriate regulatory authorities.

R645-301-112.200. NAMES, LOCATIONS, RESIDENT AGENT

Resident Agent who will accept service of process for Andalex Resources, Inc., Centennial Mines, ACT/007/019:

~~Dave Shaver~~Karin Madsen
Andalex Resources, Inc.
P.O. Box 910
East Carbon, Utah 84520
phone: (435) 888-40~~17~~00

Also, see Chapter 8 for notarized statement pertaining to completeness and accuracy.

R645-301-112.300. OWNERSHIP AND CONTROL

See Appendix 1, Part 1 for ownership and control information.

R645-301-112.310. OFFICERS AND SHAREHOLDERS

See Appendix 1, Part 1 for ownership and control information.

R645-301-112.320. OWNERSHIP AND CONTROL RELATIONSHIP TO APPLICANT

See Appendix 1, Part 1 for ownership and control information.

R645-301-112.400. PENDING, CURRENT AND PREVIOUS COAL PERMITS

See Appendix 1, Part 2 for current and previous coal mining permits

R645-301-112.500. SURFACE AND MINERAL OWNERSHIP

Owners of Record of Surface and Subsurface Contiguous Areas

Names and addresses of all owners of record for all surface and subsurface areas contiguous to and within the permit area are listed below and indicated on Plates 2 and 3.

Subsurface Owners

Franklin Real Estate Company (American Electric Power)
#2 Broadway
New York, New York (contiguous)

Bureau of Land Management
Utah State Office
~~P.O~~440 W. ~~Box 45155~~200 S. #500
Salt Lake City, Utah ~~84145-0155~~84101 (contiguous & within)

State of Utah
School and Institutional Trust Lands Administration (SITLA)
675 East 500 South, Suite 500
Salt Lake City, Utah 84102-2818 (contiguous)

Andalex Resources, Inc.
PO Box 910
East Carbon, Utah 84520 (within)

Sunedco Coal Company
7401 West Mansfield Avenue
Suite 418
P.O. Box 35-B
Lakewood, Colorado 80235 (contiguous & within)

Zion Security Corp.
10 East South Temple
Salt Lake City, Utah 84111 (within)

Mathis Land Co.
Sunnyside Star Route
445 West 610 North
Price, Utah 84501 (contiguous & within)

~~Oso Energy Resources~~
~~900 Main Avenue~~
~~Durango~~WEM Castlegate LLC.
3319 N. Univeristy Ave. #100
Orem, ~~Colorado 81301~~Utah 84604 (Gas rights)

Surface Owners

Bureau of Land Management
Utah State Office
~~P.O~~440 W. ~~Box 45155~~200 S. #500
Salt Lake City, Utah ~~84145-0155~~84101 (contiguous & within)

Gladys R. Artman
P.O. Box 22
Mountain City, Georgia 30562 (contiguous & within)

F. and D. Shimmin
711 North 5th East

Price, Utah 84501 (contiguous)

Sunedco Coal Company
7401 West Mansfield Avenue
Suite 418
P.O. Box 35-B
Lakewood, Colorado 80235 (contiguous & within)

R. and E. Nelson
583 Sundial Drive
Moab, Utah 84532 (within)

Mathis Land Co.
Sunnyside Star Route
445 West 610 North
Price, Utah 84501 (contiguous & within)

J & S Critchlow (Cave, et.al)
144 South 1650 East
Price, Utah 84501 (contiguous & within)

Andalex Resources Inc.
P.O. Box 910
East Carbon, Utah 84520 (within)

Zion Security Corporation
10 East South Temple
Salt Lake City, Utah 84111 (within)

State of Utah
School and Institutional Trust Lands Administration (SITLA)
675 East 500 South, Suite 500
Salt Lake City, Utah 84180 (contiguous & within)

R645-301-112.600. ADJACENT SURFACE AND MINERAL OWNERSHIP

Interests in Contiguous Lands
The Uintah-Southwest Utah Federal Coal Leasing Program has been dropped by the U.S. Department of Interior; therefore, previous expressions of interests by this company are no longer valid. However, existing unleased federally owned coal resources remain of interest to Andalex at such time as currently controlled reserves have been exhausted.

R645-301-112.700. MSHA NUMBERS FOR ALL MINE-ASSOCIATED STRUCTURES

The Centennial Project includes the development of three separate mines. The names and M.S.H.A. I.D. numbers for existing mines and all sections are as follow:

Pinnacle Mine - M.S.H.A. I.D. #42-01474
Apex Mine - M.S.H.A. I.D. #42-01750
Aberdeen Mine - M.S.H.A. I.D. #42-02028

R645-301-112.800. STATEMENT OF ALL LANDS AND INTERESTS IN LANDS

The Uintah-Southwest Utah Federal Coal Leasing Program has been dropped by the U.S. Department of Interior; therefore, previous expressions of interests by this company are no longer valid. However, existing unleased federally owned coal resources remain of interest to Andalex at such time as currently controlled reserves have been exhausted.

R645-301-113. VIOLATION INFORMATION

History of Violations

Appendix 1, Part 3 contains a listing of all violations received within the last three years prior to the date of this application by Andalex and affiliated companies.

R645-301-113.100. COMPLIANCE INFORMATION

Andalex Resources, Inc., affiliates or persons controlled by or under common control with Andalex haven't had a mining permit suspended or revoked within the last five years.

Andalex Resources, Inc., affiliates or persons controlled by or under common control with Andalex have not forfeited a mining bond or similar security in lieu of bond.

Appendix 1, Part 3 contains a listing of all violations received within the last three years prior to the date of this application by Andalex and affiliated companies.

R645-301-113.110. SUSPENDED OR REVOKED PERMITS

Andalex Resources, Inc., affiliates or persons controlled by or under common control with Andalex haven't had a mining permit suspended or revoked within the last five years.

R645-301-113.120. FORFEITED BONDS

Andalex Resources, Inc., affiliates or persons controlled by or under common control with Andalex have not forfeited a mining bond or similar security in lieu of bond.

R645-301-113.200. EXPLANATION OF PERMIT OF BOND FORFEITURE

N/A

R645-301-113.210 PERMIT AND BOND IDENTIFICATION

N/A

R645-301-113.220. REGULATORY AUTHORITIES INVOLVED

See above

R645-301-113.230. CURRENT STATUS OF PERMIT AND BOND

See above

R645-301-113.240. ADMINISTRATIVE OR JUDICIAL PROCEDURES

Appendix 1, Part 3

R645-301-113.250. CURRENT STATUS OF PROCEEDINGS

Appendix 1, Part 3

R645-301-113.300. LIST OF ALL VIOLATIONS NOTICES

Appendix 1, Part 3

R645-301-113.310. IDENTIFICATION OF VIOLATIONS

Appendix 1, Part 3

R645-301-113.320. DESCRIPTION OF VIOLATIONS

Appendix 1, Part 3

R645-301-113.330. LOCATION OF VIOLATIONS PROCEEDINGS

Appendix 1, Part 3

R645-301-113.340. STATUS OF VIOLATIONS PROCEEDINGS

Appendix 1, Part 3

R645-301-113.350. ACTIONS TAKEN TO ABATE VIOLATIONS

Appendix 1, Part 3

R645-301-114. RIGHT-OF-ENTRY INFORMATION

Andalex Resources, Inc., in sublease agreement with AMCA Coal Leasing, Inc., currently holds approximately ~~6528~~2281.~~83~~19 acres of private and federal coal leases~~ and~~, rights-of-way, and surface reclamation area listed below, all of which are included in their entirety within the permit area. Andalex bas~~i~~es its legal right to enter and conduct mining activities in the permit area pursuant to the language contained in the Federal Coal Leases, Section 2, Rights of Lessee as follows:

> "The lessor, in consideration of any bonus paid (or to be paid if deferred), rents and royalties and other conditions hereinafter set forth, hereby grants and leases to the lessee the exclusive right and privilege to mine and dispose of all coal ... subject to the conditions, limitations and prohibitions provided in this lease and in applicable acts and regulations, the right to construct all works, buildings, structures, equipment, and appliances which may be necessary and convenient for the mining and preparation of the coal for market, and subject to the conditions herein provided, to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted..."

A similar right to enter and conduct underground mining activities is contained in the private lease agreement with the Zion Securities Corporation as follows:

> "During the life of the lease, so long as lessee is not in default hereunder, it may freely prospect, mine and develop the lease premises, extract and sell such coal therefrom as it may elect, and use the surface and underground thereof for all lawful purposes including the exploration and mining to be conducted therein and thereon. It may also use the leased lands in connection with the mining and development of other lands which it may own, lease, or acquire as a part of its general mining operations in the area."

Legal right-of-entry information for all federal and fee leases and rights-of-way are found in Appendix J, "Other Approvals". None of the leases' rights-of-entry is a subject of pending litigation.

The Federal Coal Leases are described as follows (please see Figure 1-2):

1) SL-027304:

Tract 1: (original lease)
T.13S., R.11E., SLM, Utah
Sec. ~~7; S2SE4,~~
~~Sec.~~ 18; NW4NE4.

Tract 2: (lease modification)
T.l3S., R.11E., SLM, Utah
Sec. 7; Lot 4;
Sec. 18; Lot 1, N2NE4NW4, SW4NE4NW4
entire lease (Tracts 1 and 2) containing ~~235~~155.96 acres, more or less.

This lease was originally assigned to W.F. Olsen on September 1, 1925. On May 1, 1959, the lease was assigned to F.H. Larson and then to Centennial Coal Associates on February 1, 1973. AMCA Coal Leasing, Inc., acquired the lease in February, 1977 and subsequently added Tract 2 through lease modification criteria on October 26, 1981. The lease was partially relinquished on March 12, 2012. See Appendix AA.

*****(NOTE: The legal description of the composite lease as described on the existing BLM lease form is as follows:
T.l3S., R.11E., SLM, Utah
Sec. 7; Lot 4~~, S2SE4~~
Sec. 18; Lot 1, NW4NE4, N2NE4NW4, SW4NE4NW4
containing ~~235~~155.96 acres, more or less.)*****

2) SL-063058:

Tract 1: (original lease)
~~T.13S., R.11E., SLM, Utah~~
~~Sec. 8; S2SW4;~~
~~Sec. 17; N2NW4, SE4NW4;~~
~~Sec. 18; NE4NE4.~~ - relinquished

Tract 2: (lease modification)
T.13S., R.11E., SLM, Utah
~~Sec. 17; SW4NW4, NE4NW4SW4, W2NW4SW4,~~
~~Sec. 18; E2SE4NE4, NW4SE4NE4, SW4NE4, E2NE4SE4~~ Sec. 18; SW4NE4
entire lease containing 4~~0~~0 acres, more or less.

The original lease of 80 acres was assigned to C.D. Sutton on August 3, 1942. On July 27, 1950, the lease was amended

to embrace 200 acres. An additional 40 acres was added December 13, 1951. The leases were posted to F.H. Larson on May 1, 1970 and then to Centennial Coal Associates on February 1, 1973. AMCA Coal Leasing, Inc., acquired the lease in February, 1977 and subsequently added Tract 2 through the federal lease modification criteria. The lease was partially released on March 12, 2012 and April 20, 2012. See Appendix AA.

*****(NOTE: The legal description of the composite lease as described on the existing BLM lease form is as follows:
T.l3S., R.11E., SLM, Utah
Sec. ~~8; S2SW4~~
~~Sec. 17; NW4, NE4NW4SW4, W2NW4SW4~~
~~Sec. 18; NE4NE4, E2SE4NE4, NW4SE4NE4, SW4NE4, E2NE4SE4~~18; SW4NE4
containing ~~40~~40 acres, more or less.)*****

3) UTU-010581:
Tract 1: (original lease)
T.13S., R.11E., SLM, Utah
~~Sec. 5; All~~
~~Sec. 6, All~~
Sec. 7; ~~Lot 1, NE4, NE4NW4, N2SE4;~~
~~Sec. 8; N2, N2S2, S2SE4;~~
~~Sec. 9; W2SW4;~~
~~Sec. 17; N2NE4.~~
NW4SE4.

Tract 2: (lease modification)
~~T.13S., R.11E., SLM, Utah~~
~~Sec. 17; S2NE4, N2NE4SW4, NE4SE4, N2NW4SE4~~
~~- relinquished~~
entire lease containing ~~1,842.39~~40 acres, more or less.

This lease was assigned to C.D. Sutton on February 1, 1956. On May 1, 1970 the lease was assigned to F.H. Larson and then to Centennial Coal Associates on February 1, 1973. AMCA Coal Leasing, Inc., acquired the lease in February, 1977 and subsequently added Tract 2 through the federal lease modification criteria. Lease was partially relinquished on March 12, 2012 and April 20, 2012. See Appendix AA.

*****(NOTE: The legal description of the composite lease as described on the existing BLM lease form is as follows:
T.l3S., R.11E., SLM, Utah

Sec. ~~5; All~~
~~Sec. 6; All~~
~~Sec. 7; Lot 1, NE4NW4,NE4, N2SE4~~
~~Sec. 8; N2, N2S2, S2SE4~~
~~Sec. 9; W2SW4~~
~~Sec. 17; NE4, N2NE4SW4, NE4SE4, N2NW4SE4~~7; NW4SE4
containing ~~1,842.39~~40 acres, more or less.)*****

4) U-05067-08916

~~T.13S., R.11E., SLM, Utah~~
~~Sec. 4; Lots 5-8~~
~~Sec. 9; NW4NE4, N2NW4, SW4NW4, NE4SW4~~
~~containing 360 acres, more or less~~Lease was relinquished on March 12, 2012. See Appendix AA.

5) UTU-66060

Tract 1: (original lease)
~~T.12S, R.11E., SLM, Utah~~
~~Sec. 31; Lots 3-6, Lots 13-22~~

T.13S, R.10E., SLM, Utah
Sec. 1; Lots ~~1-8~~3 and 4, S2N~~2~~W4
~~Sec. 12; Lot 1~~

Tract 2: (lease modification)
~~T.12S., R.11E., SLM, Utah~~
~~Sec. 31; Lot 12~~
~~Sec. 32; W2SW4, SW4NW4~~
- relinquished
entire lease containing ~~1093~~161.~~32~~41 acres more or less.

UTU-66060 is subject to the terms and conditions set forth in the Federal Coal Lease issued by the Bureau of Land Management October 3, 1994. Lease was partially relinquished on March 12, 2012 and April 20, 2012. See Appendix AA.

*****(NOTE: The legal description of the composite lease as described on the existing BLM lease form is as follows:
T.~~12S., R.11E., SLM, Utah~~
~~Sec. 31; Lots 3-6, Lots 12-22~~
~~Sec. 32; W2SW4, SW4NW4~~
~~T.~~13S., R.10E., SLM, Utah
Sec. 1; Lots ~~1-8~~3 and 4, S2N~~2~~W4
~~Sec. 12; Lot 1~~
containing ~~1093~~161.~~32~~41 acres more or less.)*****

6) UTU-69600

T.13S., R10E. SLM, Carbon County, Utah
Sec. 1: SW4
Sec. 12: ~~l~~Lots ~~2-11~~3-7, Lot 11, ~~W2W2, NE4SW4~~W2NW4,
containing ~~801.48~~497.13 acres, more or less

The name and address of the lessor is American Electric Power Service Corporation, Fuel Supply Department, P.O. Box 700, Lancaster, Ohio 43130. This agreement was executed on May 1, 1992. Lease was partially relinquished on March 12, 2012. See Appendix AA.

7) UTU-79975

~~T. 12S., R. 11E. SLM, Utah~~
~~Sec. 29; SW4SW4, SW4SE4~~
~~Sec. 30; Lots 4, 12, 14-16~~
~~Sec. 31; Lots 1, 2, 7-11~~
~~Sec. 32, W2NE4, E2NW4, NW4NW4, NE4SW4~~
~~containing 702.73 acres, more or less.~~

Lease was relinquished on August 20, 2013.

The private fee leases are described as follows (see Figure 1-2):

8) Mathis Fee Lease

T.12S., R.10E., SLM, Utah
Sec. 36; All
containing 640 acres, more or less.

9) Zion Fee Lease

T.13S., R.11E., SLM, Carbon County, Utah
Sec. 7; S2NW4, N2SW4, SE4SW4
containing 200 acres, more or less.

The name and address of the lessor is Zion Securities Corporation, 10 East South Temple Street, Salt Lake City, Utah. This lease was originally made and entered into between Zion's and Centennial Coal Associates on August 1, 1972. AMCA Coal Leasing Inc. acquired the lease in February, 1977.

10) Sunedco Fee Lease

T.13S., R.11E., SLM, Carbon County, Utah
Sec. 9; E2NE4, SW4NE4, N2SE4
containing ~~2000~~ acres, more or less.

The name and address of the lessor is Sunedco Coal Company, 7401 West Mansfield Avenue, Suite 418, P.O. Box 35-B, Lakewood, Colorado 80235. AMCA Coal Leasing, Inc. acquired the lease in June, 1988.

The lease was removed from the LMU and Permit Area on March 12, 2012.

11) Andalex Fee

T.13S., R.11E.,SLM, Carbon County, Utah
Sec. 9; SE4NW4
containing ~~400~~ acres, more or less.

The lease was removed from the LMU and Permit Area on March 12, 2012.

The surface rights-of-way are described as follows (see Figure 1-2):

12) BLM Right-of-Way U-62045

T.13S., R.11E., SLM, Carbon County, Utah
Sec. 18; SE4NE4NW4 containing 10 acres, more or less.

This right-of-way was granted for construction of some of the surface facilities in Deadman Canyon, namely certain structures associated with the Aberdeen mine surface facilities in the southernmost area of the mineyard.

The grantor is the Department of the Interior, Bureau of Land Management, 400 West 200 South, Suite 500, Salt Lake City, Utah 84145-0155

13) BLM Right-of-Way UTU-64158

T.13S., R.10E., SLM, Carbon County, Utah
Sec. 13; Lot 1 (portions of)

T.13S., R.11E., SLM, Carbon County, Utah

Sec. 18; Lot 2, NE4SW4 (portions of)containing 1.45 acres, more or less.

This right-of-way was granted for construction of the main mine fan installation and the access road in the Left Fork.

The grantor is the Department of the Interior, Bureau of Land Management, 400 West 200 South, Suite 500, Salt Lake City, Utah 84145-0155

14) Cave Private Land Easement

T.13S., R.11E., SLM, Carbon County, Utah
Sec. 18; A portion of NE4NE4SE4NW4 containing 1.5 acres, more or less.

This easement was granted for the construction of sediment pond E located at the extreme southern end of the mineyard.

This easement has been granted by David R Cave et al whose address is 3379 East Hwy 6, Price, Utah 84501.

The surface areas retained in the permit for reclamation purposes:

15) GVH Reclamation

T.12 S., R.11 E., SLM, Carbon County, Utah
Sec. 31; Lots 2-8, 10-12, 14-16, 21

T.13 S., R10 E., SLM, Carbon County, Utah
Sec. 1; Lots 1-2

This area is for surface areas only as the coal lease below (UTU-79975) was relinquished on April 20, 2012.

16) Surface Facility Reclamation

T.13 S., R.11 E., SLM, Carbon County, Utah
Sec. 7; SW4NE4, SW4SE4

This area is for surface areas only as the coal leases below (UTU-010581 and UTSL-27304 respectively) were relinquished on April 20, 2012.

Permit Area Total lease area (described above) ~~6528.83 acres~~ 1740.48 acres

Surface Area responsibilities (for reclamation purposes)	+546.16 acres
Less Oso gaswell area	11-5.9245 acres
Total permit area	65162281.9119 acres

The following is a description of the Permit Area as shown on Figure 1-2. This is a composite description of all federal and private coal leases and rights-of-way listed above which comprise the permit area, less the Oso gaswell and pipeline area, which has been deleted from the permit area. Oso Oil and Gas Properties, LLC (15810 Park Ten Place, Suite 160, Houston TX 77084) is the owner of the gas rights from all gas being liberated from the gob vent holes (GVH) on the leases associated with the Centennial Project. Refer to Appendix Z for a complete legal description of the OSO gaswell/pipeline. Sections marked with an asterisk (*) are included in their entirety within the permit area.

T.12S., R.10E., SLM, Carbon County, Utah
Sec. 36; All (Mathis fee lease)
except for 1.64 acres associated with the Oso pipeline (see Appendix Z)

T.12S., R.11E., SLM, Carbon County, Utah
Sec. 29; SW4SW4, SW4SE4 (part of UTU-79975)

Sec. 30; Lots 4,12,14-16 (part of UTU-79975)

Sec. 31; Lots 1, 2, 7-11 (part of UTU-79975)

Lots 3-6, 12-22 (part of UTU-66060)
except for 7.862-5, 7-8, 10-12, 14-16, 21 (surface only for GVH reclamation),
except for 1.83 acres associated with the Oso gaswell and pipeline (see Appendix Z)

Sec. 32; W2NE4, E2NW4, NW4NW4, NE4SW4 (part of UTU-79975)

W2SW4, SW4NW4 (part of UTU-66060)

T.13S., R.10E., SLM, Carbon County, Utah
Sec. 1; Lots 1-8, S2N21-2 (part of UTU-66060surface only for GVH reclamation),
except for 21.4298 acres associated with the Oso pipeline (see Appendix Z)

Lots 3-4, S2NW4 (part of UTU-66060)

SW4 (part of UTU-69600)

Sec. 12*; ~~Lot 1 (part of UTU-66060)~~

Lots ~~2-11~~3-7, 11, ~~W2W2, NE4SW4~~W2NW4 (part of UTU-69600)

Sec. 13. Lot 1 (a portion thereof, part of BLM ROW 64158)

T.13S., R.11E., SLM, Carbon County, Utah

Sec. ~~4; Lots 5-8 (part of U-05067)~~

~~Sec. 5*~~ 7*; ~~All~~NW4SE4 (part of UTU-010581)

~~Sec. 6*; All (part of UTU-010581)~~

~~Sec. 7*; Lot 1, NE4NW4, NE4, N2SE4 (part of UTU-010581)~~

Lot ~~4, S2SE4~~4 (part of SL-027304)

Lots 2-3, S~~2~~W4NW4, ~~N2SW4, SE4SW4~~E2SW4 (Zions Fee Lease)

~~Sec. 8*; N2, N2S2, S2SE4 (part of UTU-010581)~~

~~S2SW4 (part of SL-63058)~~

~~Sec. 9; E2NE4, SW4NE4, SE4NW4, N2SE4 (Sunedco Fee Lease)~~

~~NW4NE4, N2NW4, SW4NW4, NE4SW4 (part of U-05067)~~

~~Sec. 17; NE4, N2NE4SW4, NE4SE4, N2NW4SE4 (part of UTU-010581)~~

~~NW4, NE4NW4SW4, W2NW4SW4 (part of SL-063058)~~

~~Sec. 18; NE4NE4, E2SE4NE4, NW4SE4NE4, SW4NE4, E2NE4SE4~~ SW4NE4, SW4SE4 (Surface only for surface facility reclamation)

Sec. 18; SW4NE4 (part of SL-063058)

Lot 1, NW4NE4, N2NE4NW4, SW4NE4NW4 (part of SL-027304)

SE4NE4NW4 (BLM ROW U-62045)

Lot 2, NE4SW4 (portions thereof, part of BLM ROW UTU-64158)

NE4NE4SE4NW4 (a portion thereof, Cave private surface easement)

R645-301-114.100. DOCUMENTATION

Appendix J

R645-301-114.200. SEVERED SURFACE AND MINERAL ESTATES

Appendix J

R645-301-114.210. WRITTEN SURFACE OWNER CONSENT FOR COAL EXTRACTION

Appendix R

R645-301-114.220. CONVEYANCE EXPRESSLY GRANTING RIGHT TO MINE COAL

Appendix J

R645-301-114.230. DOCUMENTATION OF LEGAL AUTHORITY TO MINE COAL

Appendix J

R645-301-114.300. ADJUDICATION OF PROPERTY RIGHTS DISPUTES

R645-301-114.300. ADJUDICATION OF PROPERTY RIGHTS DISPUTES

The Division does not have the authority to adjudicate property rights disputes.

R645-301-115. STATUS OF UNSUITABILITY CLAIMS

Carbon County has authorized mining and reclamation activities within 100 feet of County Road 299. (See Appendix B)

R645-301-115.100. IDENTIFICATION OF LANDS UNSUITABLE

The permit area is not within an area designated unsuitable for the surface effects of underground coal mining activities or under study for designation in an administrative proceeding initiated under those pasts. Further, there are no occupied dwellings within 300 feet of the permit area including the

Hoffman Creek area.

R645-301-115.200. CLAIMS OF EXEMPTION BY COMMITMENT PRIOR TO JANUARY 4, 1977

None.

R645-301-115.300. MINING AND RECLAMATION OPERATIONS WITHIN 300 FEET OF AN OCCUPIED DWELLING OR WITHIN 100 FEET OF A PUBLIC ROAD

None.

R645-301-116. PERMIT TERM

The starting and termination dates as well as the horizontal and vertical extent of the proposed underground mining activities over the total life of the permit are indicated on the revised Pinnacle underground layout map included as Plate 30. Also refer to the underground layout maps for the Apex and Aberdeen Mines (see Plates 29 and 31). Refer to plate 41.

R645-301-116.100. SCHEDULE OF PHASED MINING AND RECLAMATION ACTIVITIES

All surface facilities have been constructed for the Pinnacle, Apex and Aberdeen Mines. Earthwork for the Aberdeen Mine was completed in 1989. The surface facilities for the Aberdeen Mine were completed in early 1990. No additional surface facilities are required for any new leases.

Andalex has added a fan installation in the left-hand fork of Deadman Canyon. This installation was conducted according to measures outlined by the Bureau of Land Management as part of Right-of-Way U-64158. (Copy of Right-of-Way is included in Appendix B.) The location of this breakout is shown on Plate 29 (R.O.W.).

Andalex will fill, regrade and stabilize rills and gullies over 9 inches in depth. Further, Andalex has agreed to interim stabilization of all slopes and embankments within the disturbed area and has done so. One slope located at the bottom of the office driveway, has been attempted through hydroseeding, fertilizing and mulching techniques on three separate occasions. No significant erosion problems have occurred, Andalex will notify the Division in the event of any slides or other damage.

Andalex will cover acid or toxic forming materials if any are encountered. Andalex will advise the Division in the event of a

temporary shutdown, such as a letter sent to the Division when Andalex's Apex Mine was temporarily closed.

R645-301-116.200. PERMIT TERM IN EXCESS OF FIVE YEARS

The requested term of this permit is five years. Andalex will then apply for five year extensions over the life of the mine.

R645-301-116.210. COMPLETENESS AND ACCURACY FOR LONGER TERM

N/A

R645-301-116.220. DEMONSTRATION OF NEED FOR LONGER TERM

N/A

R645-301-117. INSURANCE, PROOF OF PUBLICATION AND FACILITIES OR STRUCTURES USED IN COMMON

Appendix B contains certificates of liability insurance covering personal injury and property damage resulting from this operation. Andalex commits to mitigate all subsidence related damage to renewable resources, including, but not limited to water, grazing, and wildlife habitat including raptor nests.

R645-301-117.100. LIABILITY INSURANCE

Appendix B

R645-301-117.200. NEWSPAPER PUBLICATION

A copy of the newspaper advertisement of this Mining and Reclamation Plan and proof of publication of the advertisement is filed with the Division and made part of the complete application. Also, please refer to this chapter for the public notice and proof of publication for the newly acquired Sunedco Lease.

R645-301-117.300. FACILITIES USED IN COMMON

The Centennial Project includes the development of three separate mines. The names and M.S.H.A. I.D. numbers for existing mines and all sections are as follow:

Pinnacle Mine - M.S.H.A. I.D. #42-01474
Apex Mine - M.S.H.A. I.D. #42-01750
Aberdeen Mine - M.S.H.A. I.D. #42-02028

All coal from the newly acquired AEP Lease will be mined simply

as an underground extension of the existing Pinnacle and Aberdeen Mines.

R645-301-118. FILING FEE

N/A Page 1-27 of document

R645-301-120. PERMIT APPLICATION FORMAT AND CONTENTS

Summary of Table of Contents

R645-301-100. General

R645-301-200. Soils

R645-301-300. Biology

R645-301-400. Land Use and Air Quality

R645-301-500. Engineering

R645-301-600. Geology

R645-301-700. Hydrology

R645-301-800. Bonding and Insurance

R645-301-121. REQUIREMENTS

R645-301-121.100. CURRENT INFORMATION

Information is current.

R645-301-121.200. CLEAR AND CONCISE

Information is clear and concise.

R645-301-121.300. FORMAT REQUIREMENTS

To facilitate review of the application, each chapter listed above has been further divided into specific parts and sections. These can be found listed in the detailed table of contents appearing at the beginning of this text along with the page numbers on which they appear. This table of contents also contains lists of figures, tables, plates, exhibits, and appendices to facilitate cross referencing between chapters.

Exhibits include appropriate supporting documents, reports and

publications and are included as appendices.

Maps which were not reduced to fit into the text are included in a separate volume as plates. All maps and plans are submitted in accordance with the requirements.

R645-301-123. APPLICATION FOR PERMITS, CHANGES, RENEWALS, OR TRANSFERS

Text deleted as instructed by Technical analysis.

R645-301-130. REPORTING AND TECHNICAL DATA

Persons and Consultants Involved

The following persons and/or organizations were involved in collection and analysis of the technical data set forth in this application.

1. In-House Consulting Services

   a) Andalex Resources, Inc. - AMCA Coal Leasing, Inc.
      Samuel C. Quigley - Western Project Manager
      Michael W. Glasson - Senior Geologist
      Allen D. Emmel - Environmental Planning Coordinator

2. Outside Consulting Services

   a) Dan W. Guy - Registered Professional Engineer
      (State of Utah No. 4548)
      Price, Utah
      -Sedimentation and Drainage Control Plan (April, 1980)

      - Wastewater Disposal System; Pinnacle Mine (April, 1980)
      Office Building (September, 1980)

   b) Bruce T.S. Ware - Registered Land Surveyor
      Price, Utah

   c) A and W Surveying
      Price, Utah

   d) Commercial Testing & Engineering Co.
      Denver, Colorado

e) Standard Laboratories
Huntington, Utah

f) Western Testing and Engineering
Helper, Utah

g) VanCott, Bagely, Cornwall and McCarthy
Attorneys at Law
Salt Lake City, Utah

h) Rollins, Brown, and Gunnel
Provo, Utah

i) Brigham Young University
Provo, Utah
Department of Zoology
Clayton M. White
(Raptor Study)
Department of Anthropology/Archaeology
Dr. Ray T. Matheny
(Archaeological Survey)

j) Earth Environmental Consultants
Albuquerque, New Mexico

k) Vaughn Hansen Associates
Salt Lake City, Utah
(Hydrology Study)

l) Horrocks Engineers
American Fork, Utah

Coordination and Consultation with Governmental Agencies

The following governmental agencies were consulted in the preparation of information set forth in this application.

U.S. Department of Agriculture
Soil Conservation Service
Price, Utah
(Soil and Vegetation Survey)

U.S. Department of the Interior
Bureau of Land Management
Price, Utah
Salt Lake City, Utah

Office of Surface Mining, Reclamation and Enforcement
Denver, Colorado

U.S. Geological Survey
Salt Lake City, Utah

State of Utah:
Department of Natural Resources
Division of Oil, Gas, and Mining
Salt Lake City, Utah

Antiquities Section (Consulting Services Branch)
Salt Lake City, Utah
(Archaeological Survey)

Department of Natural Resources
Division of Wildlife Resources
Salt Lake City, Utah

References:

AMCA Coal Leasing, Inc., 1978. Mining and Reclamation Plan, Zion's Fee. Submitted to the State of Utah, Department of Natural Resources, D.O.G.M.

Centennial Coal Associates, 1976. Mining Application. Submitted to the U.S. Geological Survey.

Doelling, H.H., 1972. Central Utah Coal Fields. U.G.M.S. Monograph Series No. 3.

U.S.D.A., 1978. Soil Survey and Interpretations of the Coal Creek Emery Portion of the Price River and Emery County Areas, Carbon and Emery Counties, Utah. S.C.S.

U.S.D.I., 1979. Final Environmental Statement, Development of Coal Resources in Central Utah, Parts 1 and 2.

U.G.M.S., 1966. Central Utah Coals. U.G.M.S. Bulletin No. 80.

R645-301-131. TECHNICAL DATA REQUIREMENTS

Where applicable, technical data submitted has been identified as to who prepared the information and is stamped by that registered professional engineer (P.E.).

R645-301-132. TECHNICAL ANALYSES REQUIREMENTS

Analyses are prepared by a qualified professional engineer.

R645-301-140. MAPS AND PLANS

R645-301-141. MAP FORMATS

R645-301-142. PHASES OF OPERATIONS AND MINING ACTIVITY

R645-301-142.100. PRIOR TO AUGUST 3, 1977

None by Andalex Resources. Several mines were operated by other independent companies or individuals in areas presently consumed by Andalex's surface facilities. Andalex's encroachment onto these previously disturbed areas transferred the responsibility for reclamation to Andalex. The specific locations of disturbed areas prior to Andalex's mining activities is irrelevant.

R645-301-142.200. AFTER AUGUST 3, 1977

All of Andalex's surface facilities and mining operations began after August 3, 1977.

R645-301-142.210. PRIOR TO MAY 3, 1978

See R645-301-142.100.

R645-301-142.220. SMALL OPERATOR'S EXEMPTION PRIOR TO JANUARY 1, 1979

N/A

R645-301-142.300. AFTER MAY 3, 1978 (OR JANUARY 1, 1979 FOR SMALL OPERATOR'S EXEMPTION) AND PRIOR TO APPROVAL OF STATE PROGRAM

N/A

R645-301-142.400. AFTER ISSUANCE OF PERMIT BY THE DIVISION

Refer to permit area map, Plate 4

R645-301-150. COMPLETENESS

Per Division.

R645-301-200. SOILS

R645-301-210. INTRODUCTION

As the Mathis Tract and New Federal Summit Creek Lease~~.~~ boundary change is simply an extension of underground mine workings under roughly 2,600 to 3,000 feet of cover there will be absolutely no effect on soils. Refer to Appendix X for further information regarding de-gas (GVH) wells and pad structure.

R645-301-211. PREMINING SOIL RESOURCES

The soils map, shown as Plate 18 in Volume II, is a combination of the information provided by both EEC and SCS. EEC performed the work on the north and south one-thirds of the disturbed area and the SCS performed the work on the one-third in the middle. This was for the original Pinnacle Mine approval on the Zion's Fee area (please see second half of Appendix M).

The acreages given by EEC in the soils report does not include the entire disturbed area since we know that the SCS surveyed roughly one-third of the disturbed or "to be" disturbed area. The correct ~~acreages~~acreage within Deadman Canyon, as planimetered by Andalex staff, is 34.2 acres. This of course includes the area where the Aberdeen Mine has been developed. The area of disturbed Brycan is approximately 8 acres and the Datino is 4 acres within the SCS survey. EarthFax Engineering has performed the Order 1 soil survey for the left fork fan installation. (See Appendix M.)

R645-301-212. STOCKPILING AND REDISTRIBUTION

Topsoil Handling During Operations

Removal
The area from which topsoil has been removed is 34.2 acres and includes poorly developed soils. Using dozers and front end loaders, the soil was scraped from the surface and dumped at a site near the facility location. The topsoil was removed as a separate operation from areas to be disturbed by surface installations such as roads and areas upon which support facilities are sited. The left fork topsoil will be salvaged according to EarthFax.

Storage
The topsoil storage areas in Deadman Canyon are shown on Plate 6. The topsoil has been segregated, stockpiled, and protected from wind and water erosion, and contaminants through revegetation and the use of berms.

Surveys conducted on the topsoil piles which were drawn into plans and profiles are now included in the plan in Volume II, Plate~~s~~ 37~~ and 36~~. This shows volumes stored currently.

The completed disturbance which reports to sedimentation Pond E is 9.96 acres. Please review the top soil summaries which show

totals.

The new substitute topsoil pile plan and profile is included.

The new substitute topsoil will be protected by the use of vegetation.

Disturbed areas no longer required for the conduct of mining operations have been revegetated. Upon completion of mining activities, topsoil will be distributed and reclamation will commence as outlined. Andalex will adhere to all UDOGM guidelines.

R645-301-220. ENVIRONMENTAL DESCRIPTION

Appendix M.

R645-301-221. PRIME FARMLAND INVESTIGATION

Appendix M

R645-301-222. SOIL SURVEY

Appendix M

R645-301-222.100. SOIL MAP

Plate 18

R645-301-222.200. SOIL IDENTIFICATION

Appendix M

R645-301-222.300. SOIL DESCRIPTION

Appendix M

R645-301-222.400. SOIL PRODUCTIVITY

Appendix M

R645-301-223. SOIL CHARACTERIZATION

Appendix M

R645-301.224. SUBSTITUTE TOPSOIL

Two test plot locations were decided upon based on certain known parameters. The ~~5,240~~12,357 yard substitute material area chosen was once designated as substitute topsoil. Now that the shop building is in place, this should not have any impact on the suitability of the material. The second location depicted on Plate 6 near the Apex Truck Loadout is very similar, if not identical material, to the shop pad material (the revegetation test will ultimately prove this). To prove the materials suitability, Andalex has proposed to test the material using the

approved seed mixture on the locations shown on Plate 6. The area of the test plots are both currently heavily vegetated indicating good potential. These test plots will be monitored for two years and evaluated for growth and species success. It is anticipated that these areas will succeed and solve the deficit problem.

These pads were constructed in 1982 during the construction of the Apex Mine. The Shop pad and the Apex truck loadout pad both have out-slopes which we currently feel contain suitable topsoil substitute material. In 1982 these slopes were groomed with heavy equipment and graded prior to being hydroseeded with the interim seed mixture and then hydromulched. Mulch in the amount of one ton per acre was used at the time. In 1990 the approved seed mixture was hand broadcasted onto these same slopes which were already fairly heavily vegetated. The seed was raked in to the extent possible and no additional mulch was used because of the vegetative cover in place. Also, samples have been taken of this substitute material (three separate locations at each site) and have been sent in to a qualified soil testing laboratory. These samples will be tested for parameters outlined in Table 6 "Guidelines for Overburden and Topsoil Management", 1988. Results of these tests will be included in the permit as soon as they are available.

Deadman Canyon Topsoil Pile Summary, Existing
(See Plates 6 and 37)

Topsoil Pile A	35,731 cubic feet
Topsoil Pile C	6,829 cubic feet
Topsoil Pile F	60,290 cubic feet
Topsoil Pile G	167,980 cubic feet
Topsoil Pile J	94,500 cubic feet
Total Topsoil Stored in Deadman Canyon	365,330 cubic feet (13,531 cubic yards)

Deadman Canyon Topsoil Pile Summary~~, Proposed~~
(See Plates 6 and 3~~8~~7)

Topsoil Piles J contains 94,500 cubic feet which includes the original Topsoil Pile B which was moved during the construction of the Aberdeen Mine.

~~Based on the size of t~~The disturbed area ~~and the amount of topsoil required (6"), we have calculated that there is a 8,000 yd.^{3} topsoil deficit~~in Deadman Canyon (34.2 acres) will have six (6) inches of topsoil distributed at final reclamation, for a total of 27,588 cubic yards. With the total of 13,531 cubic yards of topsoil currently stored, as noted above, a deficit of 14,057 cubic yards exists. The topsoil substitutes will make up this deficit.

The test plots previously discussed regarding the topsoil deficit is further discussed here.

Two test plot locations were decided upon based on certain known parameters. The first location is south of the shop building and contains ~~5,240~~12,357 cubic yards. The second location is southwest of the Apex Mine truck loadout and contains 1,700 cubic yards (see Plate 6). The ~~5,240~~12,357 yard substitute material area chosen was once designated as substitute topsoil. Now that the shop building is in place, this should not have any impact on the suitability of the material. The second location depicted on Plate 6 near the Apex Truck Loadout is very similar, if not identical material, to the shop pad material (the revegetation test will ultimately prove this). To prove the materials suitability, Andalex has proposed to test the material using the approved seed mixture on the locations shown on Plate 6. The area of the test plots are both currently heavily vegetated indicating good potential. These test plots will be monitored for two years and evaluated for growth and species success. It is anticipated that these areas will succeed and solve the deficit problem. The first quantitative monitoring study will take place in the summer of 1992.

Topsoil substitute storage area signs have been placed strategically at the two substitute storage areas at the minesite. They will clearly mark the location of these storage

area.

R645-301-230. OPERATION PLAN

Topsoil Handling During Operations

Removal

The area from which topsoil has been removed is 34.2 acres in Deadman Canyon, and includes poorly developed soils. Using dozers and front end loaders, the soil was scraped from the surface and dumped at a site near the facility location. The topsoil was removed as a separate operation from areas to be disturbed by surface installations such as roads and areas upon which support facilities are sited. ~~A~~Topsoil was salvaged from the 1.02 acres of disturbed area, and approximately 750 cubic yards of topsoil ~~will be~~is stored, in the left hand fork of Deadman Canyon for use during reclamation of the left fork fan installation. (See Plate LF-1.) Approximately 11.97 acres of total surface disturbance is associated with the GVH pads (see Appendix X). The total cumulative surface disturbance for the Centennial Project is approximately 47.19 acres.

Storage

The topsoil storage areas for Deadman Canyon are shown on Plate 6. The topsoil has been segregated, stockpiled, and protected from wind and water erosion and contaminants through revegetation and the use of berms.

Surveys conducted on the topsoil piles in Deadman Canyon, which were drawn into plans and profiles, are now included in the plan in Volume II, Plate~~s~~ 37~~ and 36~~. This shows volumes stored currently.

Topsoil that was salvaged for the left hand fork fan installation is stored approximately 200 feet west of the fan pad (see Plate LF-1). Each individual GVH pad site stores its respective topsoil on or near the pad site. See Appendix X for each pad's respective disturbed area and salvaged topsoil amounts.

The completed disturbance which reports to sedimentation Pond E is 9.96 acres. Please review the top soil summaries which show totals and deficiencies in R645-301-224.

The new substitute topsoil pile plan and profile is included.

The new substitute topsoil will be protected by the use of vegetation.

R645-301-231. GENERAL REQUIREMENTS

R645-301-231.100 REMOVAL AND STORAGE

See R645-301-212.

R645-301-231.200. SUITABILITY OF TOPSOIL

SUBSTITUTES

See R645-301-224.

R645-301-231.300. TESTING PLAN

See R645-301-224.

R645-301-231.400. TOPSOIL HANDLING AND STORAGE AREAS

See R645-301-212.

R645-301-232. TOPSOIL AND SUBSOIL REMOVAL

See R645-301-212.

R645-301-232.100. TOPSOIL SEGREGATION

See R645-301-212.

R645-301-232.200. INSUFFICIENT QUANTITY OR POOR QUALITY

See R645-301-224.

R645-301-232.300. TOPSOIL LESS THAN SIX INCHES THICK

N/A

R645-301-232.400. TOPSOIL REMOVAL FOR MINOR DISTURBANCES

N/A

R645-301-232.410. SMALL STRUCTURES

N/A

R645-301-232.420. PROTECTION OF EXISTING VEGETATION AND EROSION PROTECTION

Disturbed areas no longer required for the conduct of mining operations have been revegetated. Upon completion of mining activities, topsoil will be distributed and reclamation will commence as outlined in re Reclamation. Andalex will adhere to all UDOGM guidelines.

R645-301-232.500. SUBSOIL SEGREGATION

N/A

R645-301-232.600. TIMING

All soils have been removed ~~with the exception of the fan break-out location in the left fork. This will be done in the autumn of 1995.~~and stored.

R645-301-232.700. TOPSOIL AND SUBSOIL REMOVAL UNDER ADVERSE CONDITIONS

N/A

R645-301-232.710. IMPRACTICABILITY

N/A

R645-301-232.720. IMPORTING TOPSOIL MATERIAL

N/A

R645-301-233. TOPSOIL SUBSTITUTES AND SUPPLEMENTS

See R645-301-224.

R645-301-233.100. SELECTED OVERBURDEN MATERIALS

See R645-301-224.

R645-301-233.200. SUITABILITY OF TOPSOIL SUBSTITUTES AND SUPPLEMENTS

See R645-301-224.

R645-301-233.300. PHYSICAL AND CHEMICAL ANALYSES

Appendix M

R645-301-233.310. SCS PUBLISHED DATA

Appendix M

R645-301-233.320. SCS TECHNICAL GUIDES

Appendix M

R645-301-233.330. OTHER PUBLISHED DATA

Appendix M

R645-301-233.340. RESULTS OF FIELD-SITE TRAILS OR GREENHOUSE TESTS

Appendix M

R645-301-233.400. DEMONSTRATION OF INSUFFICIENT TOPSOIL AND SUITABILITY OF SUBSTITUTE MATERIALS

See R645-301-224.

R645-301-234. TOPSOIL STORAGE

See R645-301-212,224.

R645-301-234.100. STOCKPILING AND REDISTRIBUTION

See R645-301-212.

R645-301-234.200. STOCKPILING REQUIREMENTS

See R645-301-212.

R645-301-234.210. PLACEMENT

See R645-301-212.

R645-301-234.220. PROTECTION

See R645-301-212.

R645-301-234.230. VEGETATIVE COVER

Appendix M

R645-301-234.240. REHANDLING

N/A

R645-301-234.300. LONG-TERM STORAGE AND DISTRIBUTION

See R645-301-212.

R645-301-234.310. CAPABILITY OF HOST SITE

R645-301-234.320. SUITABILITY FOR REDISTRIBUTION

See R645-301-212.

Timetable of Major Reclamation Steps

Introduction

As this is an underground mine, there will be a limited amount of surface disturbance, consequently, reclamation will be uncomplicated.

All disturbed areas no longer required for the conduct of mining operations were immediately revegetated. In the future, any areas no longer required for operations will also be immediately reclaimed and revegetated. ~~The only new surface disturbance required at this time will be for a mine-fan break-out in the left fork of Deadman Canyon.~~

When buildings and final site preparation had been completed, the soil was revegetated to prevent erosion.

When the project is expired, all buildings and extraneous material will be removed, all mine openings will be covered and sealed, roads will be regraded and using the most advanced technology at the time, Andalex will re-establish the terrain to as nearly the original as practical. The area will be reseeded and vegetation re-established in accordance with recommendations from the regulatory authorities.

Reclamation Timetable

This timetable represents the general sequence which will be used for final reclamation. The bond estimate has the costs broken down on a site by site basis; however, actual work will be performed simultaneously at all the sites. For example, all structures and buildings will be removed prior to any recontouring. This will allow us to have certain equipment for certain jobs the shortest time possible. It should also be noted that this project may coincide with a salvage project thereby reducing Andalex's cost; however, this is not reflected in the bond estimate. Detail of work involved in various jobs (portal seals, revegetation, etc.) is found elsewhere in this chapter. The addition of the AEP Lease will have no impact on the reclamation schedule or cost.

Phase I

Job 1. Portal Seals (include fan removal)
- a. 4 Apex
- b. 7 Pinnacle
- c. 7 Aberdeen (includes left fork)
- d. 5 Wells

Job 2. Building Removal
- a. 1 Shop
- b. 1 Main Office
- c. 3 Trailers (2 warehouse, 1 lab)
- d. 3 Lamphouses
- e. 3 Bathhouses

Job 3. Structure Removal
- a. 3 Mine Conveyor Structures
- b. 3 Truck Loadouts
- c. 1 Substation
- d. Power distribution lines
- e. 4 Water Tanks
- f. 5 Fuel Tanks
- g. Main and Side Culverts * (includes left fork)

Job 4. Recontouring & Regrading*
- a. 105,500 yds.^{3} fill material
- b. Enlarge Pond E, Remove B and C

Job 5. Compaction, Scarification
- a. 33.5 acres (not including Pond E)
- b. Additional sediment measures, i.e., check dams

Job 6. Topsoil Redistribution
- a. 34.2 acres (additional approved substitute hauled in if necessary)

* Culverts will be removed starting at the north end so that natural drainage may be re-established as the culvert is removed.

Job 7. REVEGATATION
- a. 2.15 acres shrubs
- b. 14.32 acres drainage (except Pond E)
- c. 17.03 acres slopes

Job 8. Commence Monitoring

a. REVEGATION

1. Woody plants will be quantitatively monitored in years 4 and 8

2. Success for woody plants will be based on a minimum 2,000 plants-per-acre in stream bottoms and on east-facing slopes; 1,500 plants-per-acre on west-facing slopes.

b. Slope Stability

c. Water Monitoring including inlet and discharge at Pond E**

** Sampling of this water will consist of grab samples taken quarterly if any runoff occurs. Andalex's experience with this drainage is that runoff may occur every several years so that monitoring of this runoff will take place infrequently. Quarterly reports will indicate whether or not any runoff has occurred. The samples will be tested to assure that state and federal water quality requirements are being met.

Phase II

Starts When Phase I Monitoring Allows. Sedimentation Pond E will not be removed until the revegetation requirements of 817.111-.117 are met. This includes the revegetation of the entire disturbed area with the exception of Pond E. Also, Pond E will not be removed until the drainage entering the ponds meets applicable state and federal limitations. When Pond E is removed and revegetated, additional sediment control measures will be placed downstream from the revegetated area such as straw dikes until revegetation has been deemed complete by Phase II Monitoring.

Job 1. Done Simultaneously

a. Remove (recontour) Pond E

b. Remove remaining culvert

Job 2. Compact & Scarify Location

Job 3. Distribute Remaining Topsoil

Job 4. Revegetate

Job 5. Continue Monitoring until Bond is released

Please note that the earthwork involved will be done during the dry season to avoid unnecessary erosion of regraded areas. Water will be implemented if dust becomes a problem.

Reclamation Cost and Bonding

Introduction

An estimate is provided in the Reclamation Cost Projection. Notably changed from the original bond estimate is the addition of the shop/warehouse complex, the removal of which will have to be added to the reclamation cost. The original estimate has also been revised to reflect current prices and wage estimate has also been revised to reflect current prices and wage schedules. Andalex frequently requires the use of dirt contractors and is therefore current on equipment rental costs, labor costs, and productivity, since we have a great deal of experience with construction projects. Andalex has used its experience in construction and earth moving projects to estimate the amount of time which will be required and the equipment needed for individual reclamation activities. Andalex has also been involved with several revegetation projects from which it drew estimates. Andalex has provided, as Plate 15, accurate as built versus reclaimed cross sections which show the mass balance for earthwork. The approximate original contours will be achieved using the material cut out to create the fill areas. No material will be hauled in. Maps depicting accurately the surface facilities including topsoil areas, structures and facilities are included in Volume II and also specific topsoil maps and cross sections are included. Andalex expects to return topsoil to a depth of up to 6" around the surface area of 34.2 acres.

Phase I of the reclamation will include, chronologically, structure removal including culverts, portal sealing, well sealing, regrading, recontouring, distribution of topsoil and revegetation. Additional sediment control during Phase I such as straw dikes and rock check dams will be implemented as shown on Plate 16. Once Phase I is adequately achieved, Phase II will commence which includes the removal of sediment structure E and revegetation of this area. This is followed by monitoring, noting that monitoring had begun during Phase I. See 5.8 re Monitoring. This section discusses the extended period of liability as being ten years if necessary. The entire permit area receives less than 26 inches of annual precipitation; therefore, it is generally accepted that Andalex is subject to an extended period of liability. Obviously if revegetation is deemed successful prior to this ten year period, Andalex will request bond release. Andalex has not proposed any selective husbandry practices.

Cost of Reclamation

Detailed Estimate

A detailed cost projection is included.

Calculations

Calculations of the estimate are included following this page. Calculations for cuts and fills were made and are summarized following the bond estimate. This summary shows the mass balance for the entire disturbed area including the Aberdeen site, as taken from Plates 14 and 15. Station numbers are referenced on Plate 14 and cross sections are shown on Plates 15-1, 2, and 3. Similarly, topsoil piles have been surveyed for the existing minesite and are summarized following the cut and fill summary. Because of deficits Andalex has committed to testing topsoil substitute areas.

Bond or Surety Arrangement

Andalex currently holds a bond, approved by UDOGM in the amount of $1,080,000.00 and it is included in this MRP in Appendix B.

Reclamation Plan (before bond estimate)

The productivity of equipment is somewhat difficult to predict, and therefore, Andalex feels that conservative estimates were in order. There are many variables which contribute to the productivity of a particular machine, including operator skill, type of material, and the condition of the material.

It is obvious that a front-end loader, for example, can move more topsoil from a pile than, for example, a bouldery conglomerate of highly compacted material.

However, for the purpose of this analysis, it should be assured that based on means cost data the following prices on earthwork can be used:

Open Dozer grading : $2.25/yd
Fill Placement : $1.16/yd
Topsoil Placement: $1.16/yd
Topsoil Hauling: $4.55/yd
Compaction: $.21/yd

The following cost projection reflects hourly rates. An additional earthwork estimate can be found following the mass balance estimates.

Regarding the left hand fork fan installation, the specific time table for this project will coincide with the reclamation of the right hand fork minesite. The bond estimate now includes this fan installation and is still well within Andalex's existing bond amount. The specific schedule for reclamation of the fan will

begin with the cut slope backfill, followed by removal of the culvert from the left fork drainage and, finally, by streambed reclamation the same as will be performed in the right hand fork. According to comments received by the majority of the surface lands managers, the access road to the left hand fork fan installation will be reclaimed by recontouring to the extent possible (this road has been in existence for over 50 years) and revegetated. One of the surface owners (Gladys Artman) has specifically indicated her desire to leave the road in place, therefore, her permission will be required to reclaim the road. Topsoil redistribution and revegetation will follow the culvert removal. During both construction and reclamation phases, Andalex will provide adequate supplementary sediment control in the form of silt fences and/or straw berms to prevent additional sediment loads to the drainage.

Andalex has supplied the Division with a Drawing entitled "Left Hand Fork Cut/Fill". This drawing has a notation which indicates that the existing contours will reflect the reclamation contours (post-mining).

~~Revised 8/8/95~~

1989
Reclamation Cost Projection

Centennial Project

Lower Sunnyside Mine

Restoration to pre-mining land use will require:

Job Description	Equipment	Hours	Cost
1. Coal Pile Storage Area			
a. Seal portals, remove conveyor, etc.	Loader	8	$ 640
b. Fill pad	Loader	55	4,400
c. Contour slope including stream channel	D-7	50	4,000
d. Compact	Loader	15	1,200
e. Replace topsoil	Loader	23	1,840
f. Grade topsoil	Grader	15	1,050
g. Revegetate	Drill	7	350
h. Stake	Engineer	14	700
Total Coal Pile Area:			$14,180
2. Roads			
a. Recontour	D-7	5	$ 400
b. Compact	Loader	3	240
c. Replace topsoil	Loader	2	160
d. Grade topsoil	Grader	2	140
e. Revegetate	Drill	1	50
Total Roads:			$ 990
3. Seal Wells (2)			
a. Fill, cement			$ 800
Total Wells:			$ 800
4. Material Storage Area (including topsoil pile)			
a. Remove all structures	5 man crew	120	$ 9,000
b. Recontour including stream channel	D-7	30	2,400
c. Compact	Loader	4	320
d. Replace topsoil	Loader	8	640
e. Grade topsoil	Grader	4	280
f. Revegetate	Drill	2	100
g. Stake	Engineer	14	700
Total Material Storage:			$13,440

Gilson (Pinnacle Mine)

Restoration to the pre-mining land use will require:

Job Description	Equipment	Hours	Cost
1. Mine Portal Area			
a. Seal portals, remove conveyor, etc.	Loader	8	$ 640
b. Fill pad	Loader	12	960
c. Contour slope	D-7	8	640
d. Compact	Loader	4	320
e. Replace topsoil	Loader	6	480
f. Grade topsoil	Grader	4	280
g. Revegetate	Drill	2	100
h. Stake slope	Engineer	4	200
Total Portal:			$ 3,620
2. Roads (1 mile)			
a. Recontour	D-7	20	$ 1,600
b. Compact	Loader	10	800
c. Topsoil	Loader	8	640
d. Grade	Grader	8	560
e. Revegetate	Drill	4	200
Total Roads:			$ 3,800
3. Coal Pile Area			
a. Fill pad	Loader	16	$ 1,280
b. Contour slope including stream channel	D-7	20	1,600
c. Compact	Loader	4	320
d. Topsoil	Loader	6	480
e. Grade	Grader	4	280
f. Revegetate	Drill	2	100
g. Stake	Engineer	4	200
Total Stockpile Area:			$ 4,260
4. Seal Wells			
a. Fill, cement		8	$ 1,000
Total Wells:			$ 1,000
5. Material Storage & Building Areas			
a. Remove all structures (including shop/ warehouse)	5 man crew	240	$27,000
b. Recontour including stream channel	D-7	30	2,400
c. Compact	Loader	4	320
d. Replace topsoil	Loader	8	640
e. Grade	Grader	4	280
f. Revegetate	Drill	2	100
Total Material:			$30,740

Aberdeen Mine

Restoration to the pre-mining land use will require:

Job Description	Equipment	Hours	Cost
1. Mine Portal Area			
a. Seal portals, remove conveyor, etc.	Loader	8	$ 640
b. Fill pad	Loader	24	1,920
c. Contour slope	D-7	16	1,280
d. Compact	Loader	8	640
e. Replace topsoil	Loader	12	960
f. Grade topsoil	Grader	8	560
g. Revegetate	Drill	4	200
h. Stake slope	Engineer	8	400
Total Portal Area:			$ 6,600
2. Coal Pile Area (including topsoil storage and sedimentation pond)			
a. Fill pad	Loader	50	$ 4,000
b. Contour slope including stream channel	D-7	50	4,000
c. Compact	Loader	15	1,200
d. Replace topsoil	Loader	22	1,760
e. Grade topsoil	Grader	15	1,050
f. Revegetate	Drill	7	350
g. Stake slope	Engineer	14	700
Total Stockpile Area:			$13,060

Office Site

Restoration to pre-mining land use will require:

Job Description	Equipment	Hours	Cost
1. Office Site			
a. Remove structures	5 man crew	50	$ 3,750
b. Recontour	D-7	8	640
c. Compact	Loader	4	320
d. Replace topsoil	Loader	4	320
e. Grade topsoil	Grader	4	280
f. Revegetate	Drill	2	100
g. Stake slope	Engineer	4	200
Total Office Site:			$ 5,610
2. Seal Well (1)			
a. Fill, cement		4	$ 400
Total Well:			$ 400
3. Roads 1/4 Mile			
a. Recontour	D-7	5	$ 400
b. Compact	Loader	3	240
c. Replace topsoil	Loader	2	160
d. Grade topsoil	Grader	2	140
e. Revegetate	Drill	1	50
Total Roads:			$ 990

Total Projected Reclamation Costs:

Lower Sunnyside Mine	$ 29,410
Gilson (Pinnacle) Mine	43,420
Aberdeen Mine	19,660
Office Site	7,000
Monitoring (5 years)	10,000
Total Reclamation, 1987 $	$109,490
Contingency 10%	10,950
Grand Total*	$120,440

* Please note that as no reclamation is required for the Centennial ——Seam Mine no costs for reclamation are described above.

MASS BALANCE SUMMARY

Station	CUT		FILL	
	ft^2	yds^3	ft^2	yds^3
-1 + 00	520	963	160	2148
0 + 00	0	815	1000	1889
1 + 00	440	1000	20	407
2 + 00	100	1074	200	1259
3 + 00	480	3333	480	1519
4 + 00	1320	2593	340	2259
5 + 00	80	2889	880	1852
6 + 00	1480	6778	120	2704
7 + 00	2180	9037	1340	4074
8 + 00	2700	8259	860	2556
9 + 00	1760	6000	520	4297
10 + 00	1480	6444	1800	6519
11 + 00	2000	6259	1720	5593
12 + 00	1380	9222	1300	5074
13 + 00	3600	7037	1440	6148
14 + 00	200	370	1880	8852
15 + 00	0	370	2900	5815
16 + 00	200	407	240	2111
17 + 00	20	1889	900	5593
18 + 00	1000	2889	2120	8185
19 + 00	560	2000	2300	5319
20 + 00	520	4444	572	3059
21 + 00	1880	8704	1080	3185
22 + 00	2820	8556	640	3037
23 + 00	1800	3741	1000	3370
24 + 00	220	1148	820	2963
25 + 00	400	926	780	4519
26 + 00	100	2630	1660	10222
27 + 00	1320	4444	3860	7407
28 + 00	1080	3111	140	1741
29 + 00	600	2222	800	2815
30 + 00	600	2074	720	2222
31 + 00	520	1889	480	1741
32 + 00	500	1482	460	2185
33 + 00	300	2037	720	1815
34 + 00	800	3111	260	852
35 + 00	880	3185	200	1630
36 + 00	840	1963	680	3482
37 + 00	220	1741	1200	5407
38 + 00	720	2741	1720	4037
39 + 00	760	3000	460	6111
40 + 00	860	2704	2840	5593
41 + 00	600	1444	180	1148
42 + 00	180	482	440	963
43 + 00	80	148	80	148

* Total Cut = 147,555 yds^3; * Total Fill = 163,825 yds^3

* Ratio of fill to cut = 1.11:1.00. This allows for an expansion factor of 1.11 or 11% on the cut material.

As Constructed Earthwork Volume (Aberdeen Mine)

Cut	63,506 yds.^{3}	
Fill	66,625 yds.^{3}	
Topsoil	3,500 yds.^{3}	(Piles H & J)

As Constructed Earthwork Volumes
(including Aberdeen Site)

Cut	117,273 yds.^{3}
Fill	112,969 yds.^{3}
Topsoil	8,500 yds.^{3}

For purposes of reclamation costs for earthwork, the following estimates can be used. Please keep in mind that as built cross sections for the Aberdeen Mine will aid in the final earthwork estimates.

Open Grading (including 10% swell factor)
66,625 + 6663 = 73,288 @ $2.22
112,969 + 11,297 = 124,266 @ $2.25
197,554 @ $2.25 = $444,500
Topsoil Hauling and Placement
22,000 + 2200 = 24,200 @ $5.71 = $138,000
Compaction
158,294 @ $.21 = $33,242
Total Earthwork: $615,742

There is a 8,000 yd.^{3} topsoil deficit. The topsoil substitutes will make up this deficit.

The test plots previously discussed regarding the topsoil deficit is further discussed here.

Two test plot locations were decided upon based on certain known parameters. The ~~5,240~~12,357 yard substitute material area chosen was once designated as substitute topsoil. Now that the shop building is in place, this should not have any impact on the suitability of the material. The second location depicted on Plate 6 near the Apex Truck Loadout is very similar, if not identical material, to the shop pad material (the rEVEGATATION test will ultimately prove this). To prove the materials suitability, Andalex has proposed to test the material using the approved seed mixture on the locations shown on Plate 6. The area of the test plots are both currently heavily vegetated indicating good potential. These test plots will be monitored for two years and evaluated for growth and species success. It is anticipated that these areas will succeed and solve the deficit problem.

R645-301-241. GENERAL REQUIREMENTS

R645-301-242. SOIL REDISTRIBUTION

Soil is to be redistributed to a depth of 6-inches across the entire 34.2 acre disturbed area.

R645-301-242.100. CRITERIA FOR REDISTRIBUTION

The only criteria is that it will be redistributed to a depth of 6 inches.

R645-301-242.110. UNIFORMITY AND CONSISTENCY

The soil will be redistributed uniformly and consistent with the regraded contours.

R645-301-242.120. PREVENTION OF COMPACTION

Once redistributed, unnecessary compaction from equipment will be avoided.

R645-301-242.130. PROTECTION FROM WIND AND WATER EROSION

The topsoil will be protected from wind and water erosion through mulching.

R645-301-242.200. REGRADING AND TREATMENT

Not applicable, unless unacceptable rills and gullies are observed.

R645-301-242.300. EMBANKMENTS OF PERMANENT IMPOUNDMENTS OR ROADS

N/A

R645-301-242.310. PREVENTION OF SEDIMENTATION

Pond E will be in place until the release of Phase I reclamation.

R645-301-242.320. OTHER METHODS OF STABILIZATION

Other methods may include excelsior matting on steep slopes and rip-rap.

R645-301-243. SOIL NUTRIENTS AND AMENDMENTS

As needed to be determined through Phase I monitoring.

R645-301-244. SOIL STABILIZATION

See R645-301-242.

R645-301-244.100. EROSION CONTROL AND AIR POLLUTION

See R645-301-242.

R645-301-244.200. SOIL STABILIZING PRACTICES

See R645-301-242.

R645-301-244.300. RILLS AND GULLIES

See R645-301-242.

R645-301-244.310. DISRUPTION OF POSTMINING LAND USE OR ESTABLISHMENT OF VEGETATIVE COVER

Vegetative cover will be in accordance with rEVEGATATION practices found in R645-301-331.

R645-301-244.320. CAUSE OR CONTRIBUTE TO A VIOLATION OF WATER QUALITY STANDARDS

Andalex will not violate water quality standards. This will be demonstrated through monitoring practices.

R645-301-250. PERFORMANCE STANDARDS

All performance standards will be adhered to.

R645-301-251. SOIL REMOVAL

See R645-301-212.

R645-301-252. SOIL STORAGE AND REDISTRIBUTION

See R645-301-212.

Violation History - Murray Energy Corporation

Time Period: January 1, 2012 to August 21, 2019

State	Company	Mine	MSHA ID	Permit Number	Issuing Agency	Agency NOV Number	Date Issued	Status	Description
Utah	UAEI	Centennial/Tower Mine	42-02028	007/019	DOGM	21197	9/18/2017	Abated	excess thistle on GVH pads
Utah	UAEI	Centennial/Tower Mine	42-02028	007/019	DOGM	CO 21214	6/1/2018	Abated	Failure to cap and seal degas wells

WordPerfect Document Compare Summary

Original document: K:\Tower\2019\T19-003 Midterm Task ID 5973\Text\Originals\Appendix AA.wpd
Revised document: K:\Tower\2019\T19-003 Midterm Task ID 5973\Text\Appendix AA Edits.wpd
Deletions are shown with the following attributes and color:
~~Strikeout~~, Blue RGB(0,0,255).
Deleted text is shown as full text.
Insertions are shown with the following attributes and color:
Double Underline, Redline, Red RGB(255,0,0).

The document was marked with 20 Deletions, 22 Insertions, 0 Moves.

ANDALEX RESOURCES, INC.

APPENDIX AA

CENTENNIAL PROJECT
Lease Relinquishments

C/007/019

(Revised)
~~January, 2014~~

~~CHAPTER 1~~

~~LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION~~

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~~**Table 1-1**New Lease Description1-2~~

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~~110MINIMUM REQUIREMENTS FOR LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION~~

~~111Introduction~~

August, 2019

Narrative

UtahAmerican Energy, Inc. operates the Centennial Project under the Division of Oil, Gas and Mining permit number ACT 007/019. Coal has been mined on Federal leases SL-027304, SL-063058, U-010581, U-05067-08916, UTU-66060, UTU-69600, and UTU-79975. ~~The Centennial Project mined three different seams in various areas. The Aberdeen seam ranged from approximately 5' to 8'. The Centennial seam ranged from approximately 5' to 7' and the Lower Sunnyside seam ranged from 4' to 6'.~~ Both Longwall and Room and Pillar methods of mining were utilized in mining the reserves. A significant amount of coal has been mined from all of the leases. Some leases have been mined out and others have very little remaining recoverable reserves.

UtahAmerican Energy, Inc. ~~R~~relinquished portions of the mined out leases in two ~~relinquishments~~relinquishment phases. The first relinquishment, approved ~~3/12/2012~~March 12, 2012, reduced the Federal coal leased acreage from 5,436.24 down to 2,813.48. The second relinquishment, approved April 20, 2012, reduced the Federal coal lease even further down to 894.5~~5~~0 acres ~~remaining~~. UEI retained all areas of surface disturbance conducted in association with the underground mining, and surface access to the gob-vent holes (GVH) was retained through surface use agreements.

The permit acreage dropped from 6,516.91 down to 2,2~~74~~81.~~77~~19 acres, which is the new permit acreage. The disturbed area has not changed and remains at 47.19 acres. Since the disturbed area has not changed and the disturbed legal description stays the same, the bond does not change.

Since the relinquishments reflect only Federal Coal acres and does not included State Leases, Private Leases, BLM ROW's, or Private surface ROW's or leases, it is ~~impossible~~difficult to directly correlate the Lease Relinquishment Acres to Permit Acres.

~~A new lease area~~ Thus, the Permit Acreage has been calculated utilizing the remaining Federal and Private coal lease acreage from the logical mining unit (LMU) and delineative parcels for surface areas for which UtahAmerican Energy, Inc. holds reclamation responsibilities.

The table below (Table 1) represents the lease relinquishment histories of the various leases accrued

by the Centennial Project. See Chapter 1 for the legal description ~~can be found in Table 1-1 and the new permit area is described in Table 1-2.~~

~~**TABLE 1-1**~~
~~**Andalex Resources, Inc.**~~
~~**Tower Division**~~

of the permit area, which includes the items below.

The attached Figure 1, "Lease Relinquishment Map," represents when and where lease areas were relinquished. Figure 2, "Current Permit Area," represents the current mineral leases, surface rights-of-way and easements, and delineative surface areas retained in the permit for reclamation purposes.

TABLE 1

Centennial Project Permit Lease Areas

Federal Lease UTU-66060
T. 13 S., R. 10 E., SLM, Utah
Section 1

Lot 3	***40.59***	***Acres***
Lot 4	***40.82***	***Acres***
S1/2 NE	***80.00***	***Acres***
Total	***161.41***	***Acres***

Federal Lease UTU-69600
T. 13 S., R.10 E., SLM, Utah
Section 1

SW1/4	***160.00***	***Acres***

Section 12

Lot 3	***36.71***	***Acres***
Lot 4	***37.16***	***Acres***
Lot 5	***44.08***	***Acres***
Lot 6	***45.01***	***Acres***
Lot 7	***47.17***	***Acres***

~~Lot 11~~	~~47.05~~	~~Acres~~
~~W1/2 NW~~	~~80.00~~	~~Acres~~
~~Total~~	~~497.18~~	~~Acres~~

~~Federal Lease UTU-010581~~
~~T. 13 S., R. 11 E., SLM, Utah~~
~~Section 7~~

~~NW SE~~	~~40.00~~	~~Acres~~
~~Total~~	~~40.00~~	~~Acres~~

~~Federal Lease UTSL-27304~~
~~T. 13 S., R. 11 E., SLM, Utah~~
~~Section 7~~

~~Lot 4~~	~~42.98~~	~~Acres~~

~~Section 18~~

~~Lot 1~~	~~42.98~~	~~Acres~~
~~NW NE~~	~~40.00~~	~~Acres~~
~~N1/2 NE NW~~	~~20.00~~	~~Acres~~
~~SW NE NW~~	~~10.00~~	~~Acres~~
~~Total~~	~~155.96~~	~~Acres~~

~~Federal Lease SL-63058~~
~~T. 13 S., R. 11 E., SLM, Utah~~
~~Section 18~~

~~SW NE~~	~~40.00~~	~~Acres~~
~~Total~~	~~40.00~~	~~Acres~~

~~Total of Federal Leases~~ ~~894.55~~ ~~Acres~~

~~***Mathis Fee Lease***~~

~~***T. 12 S., R. 10 E., SLM, Utah***~~

~~***Section 36***~~

~~***All***~~	~~***640.00***~~	~~***Acres***~~
~~***Total***~~	~~***640.00***~~	~~***Acres***~~

~~***Zion Fee Lease***~~

~~***T. 13 S., R. 11 E., SLM, Utah***~~

~~***Section 7***~~

~~***Lot 2***~~	~~***42.99***~~	~~***Acres***~~
~~***Lot 3***~~	~~***42.99***~~	~~***Acres***~~
~~***SE NW***~~	~~***40.00***~~	~~***Acres***~~
~~***E1/2 SW***~~	~~***80.00***~~	~~***Acres***~~
~~***Total***~~	~~***205.98***~~	~~***Acres***~~

~~***Total of Fee Leases***~~	~~***845.98***~~	~~***Acres***~~

Bureau of Land Management ROW U-62045

T. 13 S., R. 11 E., SLM, Utah

Section 18

SE NE NW 10.00 Acres

Total 10.00 Acres

Bureau of Land Management ROW UTU-64158
(Left fork fan and access road)

Located within:
T. 13 S., R. 10 E., SLM, Utah

Section 13

Lot 1

T. 13 S., R. 11 E., SLM, Utah

Section 18

Lot 2
NE SW

Total 1.45 Acres

Total of BLM R.O.W.'S 11.45 Acres

Cave Private Easement

Located within:
T. 13 S., R. 11 E., SLM, Utah

Section 18

SE NW 1.50 Acres

Total Cave 1.50 Acres

Total Private Easements 1.50 Acres

~~TABLE 1-2~~
~~Andalex Resources, Inc.~~
~~Tower Division~~
~~Centennial Project Surface Only Permit Area~~

~~Federal Lease UTU-66060~~
~~T. 13 S., R. 10 E., SLM, Utah~~
~~Section 1~~

~~Lot 1~~	~~40.12~~	~~Acres~~
~~Lot 2~~	~~40.35~~	~~Acres~~

~~T. 12 S., R. 11 E., SLM, Utah~~
~~Section 31~~

~~Lot 3~~	~~7.58~~	~~Acres~~
~~Lot 4~~	~~7.60~~	~~Acres~~
~~Lot 5~~	~~7.17~~	~~Acres~~
~~Lot 12~~	~~40.00~~	~~Acres~~
~~Lot 14~~	~~40.00~~	~~Acres~~
~~Lot 15~~	~~40.00~~	~~Acres~~
~~Lot 16~~	~~40.00~~	~~Acres~~
~~Lot 21~~	~~22.86~~	~~Acres~~
~~Total~~	~~285.68~~	~~Acres~~

~~Federal Lease UTU-79975~~
~~T. 12 S., R. 11 E., SLM, Utah~~
~~Section 31~~

~~Lot 2~~	~~7.53~~	~~Acres~~
~~Lot 7~~	~~40.00~~	~~Acres~~
~~Lot 8~~	~~40.00~~	~~Acres~~
~~Lot 10~~	~~40.00~~	~~Acres~~
~~Lot 11~~	~~40.00~~	~~Acres~~
~~Total~~	~~167.53~~	~~Acres~~

~~Federal Lease UTU-010581~~
~~T. 13 S., R. 11 E., SLM, Utah~~
~~Section 7~~

~~SW NE~~	~~40.00~~	~~Acres~~
~~Total~~	~~40.00~~	~~Acres~~

~~***Federal Lease UTSL-27304***~~
~~***T. 13 S., R. 11 E., SLM, Utah***~~
~~***Section 7***~~
~~***SW SE 40.00 Acres***~~

~~***Total 40.00 Acres***~~

~~***Surface Only Permit Area 533.21 Acres***~~

~~***PERMIT AREA TABULATION***~~

~~***Federal Coal Leases:***~~	~~***894.55***~~	~~***Acres***~~
~~***Fee Coal Leases:***~~	~~***845.98***~~	~~***Acres***~~
~~***BLM Surface R.O.W.***~~	~~***11.45***~~	~~***Acres***~~

Coal Leases

1) SL-027304

A. Legal description prior to lease relinquishments:

T.13S., R.11E., SLM, Utah

Sec. 7; Lot 4, S2SE4
Sec. 18; Lot 1, NW4NE4, N2NE4NW4, SW4NE4NW4
Containing 235.96 acres (more or less)

B. Areas relinquished on March 12, 2012:

None

C. Areas relinquished on April 12, 2012:

T.13S., R.11E., SLM, Utah

Sec. 7; S2SE4
Containing 80 acres (more or less).

D. Current lease description

T.13S., R.11E., SLM, Utah

Sec. 7; Lot 4
Sec. 18; Lot 1, NW4NE4, N2NE4NW4, SW4NE4NW4
Containing 155.96 acres (more or less).

2) SL-063058

A. Legal description prior to lease relinquishments:

T.13S., R.11E., SLM, Utah

Sec. 8; S2SW4
Sec. 17; NW4, NE4NW4SW4, W2NW4SW4
Sec. 18; NE4NE4, E2SE4NE4, NW4SE4NE4, SW4NE4, E2NE4SE4
Containing 400 acres (more or less).

B. Areas relinquished on March 12, 2012:
T.13S., R.11E., SLM, Utah
Sec. 17; SW4NW4, W2NW4SW4, NE4NW4SW4
Sec. 18; E2SE4NE4, NW4SE4NE4, E2NE4SE4
Containing 120 acres (more or less).

C. Areas relinquished on April 12, 2012:
T.13S., R.11E., SLM, Utah
Sec. 8; S2SW4
Sec. 17; N2NW4, SE4NW4
Sec. 18; NE4NE4
Containing 240 acres (more or less).

D. Current lease description
T.13S., R.11E., SLM, Utah
Sec. 18; SW4NE4
Containing 40 acres (more or less).

3) UTU-010581:

A. Legal description prior to lease relinquishments:
T.13S., R.11E., SLM, Utah
Sec. 5; All
Sec. 6; All
Sec. 7; Lot 1, NE4NW4, NE4, N2SE4
Sec. 8; N2, N2S2, S2SE4
Sec. 9; W2SW4
Sec. 17; NE4, N2NE4SW4, NE4SE4, N2NW4SE4
Containing 1,842.39 acres (more or less).

B. Areas relinquished on March 12, 2012:
T.13S., R.11E., SLM, Utah
Sec. 5; Lots 1, 2, 3, 6, 7, 8
Sec. 6; Lots 3, 4, 5, 6
Sec. 7; Lot 1, E2NE4, NE4SE4
Sec. 8; N2, NW4SW4

Sec. 9; W2SW4
Sec. 17; SW4NE4, NE4SE4, N2NW4SE4, N2NE4SW4
Containing 1,125.23 acres (more or less).

C. Areas relinquished on April 12, 2012:
T.13S., R.11E., SLM, Utah
Sec. 5; Lots 4 and 5
Sec. 6; Lots 1, 2, 7, 8
Sec. 7; W2NE4, NE4NW4
Sec. 8; NE4SW4, SE4
Sec. 17; NW4NE4, E2NE4
Containing 677.16 acres (more or less).

D. Current lease description
T.13S., R.11E., SLM, Utah
Sec. 7; NW4SE4
Containing 40 acres (more or less).

4) U-05067-08916:

A. Legal description prior to lease relinquishments:
T.13S., R.11E., SLM, Utah
Sec. 4; Lots 5-8
Sec. 9; NW4NE4, N2NW4, SW4NW4, NE4SW4
Containing 360 acres (more or less).

B. Areas relinquished on March 12, 2012:
All - Lease fully relinquished - 360 acres (more or less).

5) UTU-66060

A. Legal description prior to lease relinquishments:
T.12S., R.11E. SLM, Utah
Sec. 31; Lots 3-6, Lots 12-22
Sec. 32; W2SW4, SW4NW4

T.13S., R10E., SLM, UTAH
Sec. 1; Lots 1-8, S2N2
Sec. 12; Lot 1
Containing 1093.22 acres (more or less).

B. Areas relinquished on March 12, 2012:

T.12S., R.11E., SLM, Utah

Sec. 31; Lots 6, 19, 20, 22

T.13S., R.10E., SLM, Utah

Sec. 1; Lots 5, 6, 7, 8, S2NE4

Sec. 12; Lot 1

Containing 406.13 acres (more or less)

C. Areas relinquished on April 12, 2012:

T.12S., R.11E., SLM, Utah

Sec. 31; Lots 3, 4, 5, 12, 13, 14, 15, 16, 17, 18, 21

Sec. 32; W2SW4, SW4NW4

T.13S., R.10E., SLM, Utah

Sec. 1; Lot 1-2

Containing 525.68 acres (more or less).

D. Current lease description

T.13S., R.10E., SLM, Utah

Sec. 1; Lots 3-4, S2NW4

Containing 161.41 acres (more or less).

6) UTU-69600

A. Legal description prior to lease relinquishments:

T.13S., R.10E., SLM, Carbon County, Utah

Sec. 1; SW4

Sec. 12; Lots 2-11, W2W2, NE4SW4

Containing 801.48 acres (more or less).

B. Areas relinquished on March 12, 2012:

T.13S. R.10E., SLM, Carbon County, Utah

Sec. 12; Lots 2, 8, 9, 10, W2SW4, NE4SW4

Containing 304.35 acres (more or less).

C. Areas relinquished on April 12, 2012:

No relinquishments

D. Current lease description:

T.13S., R.10E., SLM, Carbon County, Utah

Sec. 1; SW4
Sec. 12; Lots 3, 4, 5, 6, 7, 11, W2NW4
Containing 497.13 acres (more or less).

7) UTU-79975

A. Legal description prior to lease relinquishments:

T.12S., R.11E., SLM, Utah

Sec. 29; SW4SW4, SW4SE4,
Sec. 30; Lots 4, 12, 14-16
Sec. 31; Lots 1, 2, 7-11
Sec. 32; W2NE4, E2NW4, NW4NW4, NE4SW4
Containing 702.73 acres (more or less).

B. Areas relinquished on March 12, 2012:

T12S., R11E., SLM, Utah

Sec. 29; SW4SE4,
Sec. 30; Lot 12,
Sec. 32; NE4SW4, E2NW4, W2NE4
Containing 280 acres (more or less).

C. Areas relinquished on April 12, 2012:

All - Lease fully relinquished - 422.73 acres (more or less).

Private Fee Leases

8) Mathis Fee Lease

A. Current lease description:

T.12S., R.10E., SLM, Utah

Sec. 36; All
Containing 640 acres (more or less).

9) Zion Fee Lease

A. Current lease description:

T.13S., R.11E., SLM, Utah

Sec. 7; Lots 2-3, SE4NW4, E2SW4
Containing 205.98 acres (more or less).

Surface Permit Areas

10) BLM ROW #U-62045 (southern portion of surface facilities)

A. Current ROW description:

T.13S., R.11E., SLM, Utah

Sec. 18; SE4NE4NW4

Containing 40 acres.

11) BLM ROW #UTU-64158 (left fork fan site and access road)

A. Current ROW description:

T.13S., R.10E., SLM, Utah

Sec. 13; Portion of Lot 1

T.13S., R.10E., SLM, Utah

Sec. 18; Portion of Lots 1-2, Portion of SE4NW4

Containing 1.45 acres.

12) Cave Private ~~Easements: 1.50 Acres Surface Only~~Easement

A. Current easement description:

T.13S., R.11E., SLM, Utah

Sec. 18; Portion of NE4SE4NW4

Containing 1.50 acres.

13) Gob Vent Holes (for reclamation responsibilities only)

A. Current delineative area description:

T.12S., R.11E., SLM, Utah

Sec. 31; Lots 2-5, 7-8, 10-12, 14-16,21

T.13S., R.11E., SLM, Utah

Sec. 1; Lots 1-2

Less WEM Castlegate Gas Well Pad and Pipeline (5.45 acres)

Containing 447.76 acres (more or less).

14) Surface Facilities (for reclamation responsibilities only)

A. Current delineative area description:

T.13S., R.11E., SLM, Utah

Sec. 7; SW4NE4, SW4SE4

Containing 80 acres (more or less).

Permit Summary

Total of Federal Leases: 533.21 Acres

Permit Area Subtotal 2,286.69 Acres

Less OSO Gaswell Area -11.92 Acres

894.50 acres

Total of Fee Leases: 845.98 acres

Total of Surface ROW and Easements: 12.95 acres

Total of Surface Reclamation Only Areas: 527.76 acres

Total Permit Area: 2,274.77 Acres

112 Identification of Interests

Refer to the same section of the approved M&RP.

112.100 Business Entity

Refer to the same section of the approved M&RP.

112.200 Applicant and Operator

Applicant and Operator: Andalex Resources, Inc
Tower Division
P.O. Box 910
East Carbon, Utah 84520
Telephone: (435) 888-4000

Contact Person and
Resident Agent: R. Jay Marshall
Andalex Resources, Inc
Tower Division
P.O. Box 910
East Carbon, Utah 84520
Telephone: (435) 888-4000

~~**Responsibility: Andalex Resources, Inc. is responsible for submission of information and will pay abandoned mine reclamation fees.**~~

~~**112.300 Officers of the Applicant**~~

~~**Refer to the same section of the approved M&RP.**~~

~~**112.400 Coal Mining and Reclamation Operation Owned or Controlled**~~

~~**Refer to the same section of the approved M&RP.**~~

~~**112.500 Legal or Equitable Owner of the Surface and Mineral Properties**~~

~~**The legal and equitable owner of the surface and mineral properties to be affected by this operation during the duration of the permit period are listed below:**~~

Surface Owners

David R. & Mildred Cave, et al.
144 South 1650 East
Price, Utah 84501

Mathis Land Co.
Sunnyside Star Route
Price, Utah 84501

F. and D. Shimmin
711 North 500 East
Price, Utah 84501

Sub-Surface Owners

United States of America
Bureau of Land Management
Utah State Office
136 East South Temple
Salt Lake City, Utah 84111

Mathis Land Co.
Sunnyside Star Route
Price, Utah 84501

Oso Energy Resources Corp.
900 Main Avenue, Suite D
Durango, Colorado 81301 (gas rights)

112.600 Owners of Record of Property Contiguous to Proposed Permit Area

Owners of record for surface and mineral properties contiguous to the proposed permit area are listed below:

Contiguous Surface Owners

David R. & Mildred Cave, et al.
144 South 1650 East
Price, Utah 84501

Mathis Land Co.
Sunnyside Star Route
Price, Utah 84501

F. and D. Shimmin
711 North 500 East
Price, Utah 84501

Contiguous Sub-Surface Owners

United States of America
Bureau of Land Management
Utah State Office
136 East South Temple
Salt Lake City, Utah 84111

State of Utah
School Trust Lands Administration
675 East 500 South
Salt Lake City, Utah 84102

Mathis Land Co.
Sunnyside Star Route
Price, Utah 84501

Oso Energy Resources Corp.
900 Main Avenue, Suite D
Durango, Colorado 81301 (gas rights)

~~112.700 MSHA Numbers~~

~~Refer to the same section of the approved M&RP.~~

~~112.800 Interest in Contiguous Lands~~

~~Andalex Resources, Inc. has no interest in contiguous lands other than those currently owned as shown on Plate 1A of the approved M&RP.~~

~~112.900 Certification of Submittal Information~~

~~No information has changed in the approved M&RP because of this submittal. Refer to the same section of the approved M&RP.~~

~~113 Violation Information~~

~~Refer to the same section in the approved M&RP.~~

~~114 Right-of-Entry Information~~

~~Refer to the same section of the approved M&RP. A surface use agreement with the private surface owners is in place. A memorandum of this agreement is included in the MRP and is on record at the County Recorder's office. (See Appendix X-1)~~

~~** Existing acres reflect contemporaneous reclamation work completed to date.~~

~~115 Status of Unsuitability Claims~~

~~Refer to the same section of the approved M&RP.~~

~~116 Permit Term~~

~~Refer to the same section of the approved M&RP.~~

~~117 Insurance, Proof of Publication, and Facilities and Structures Used in Common~~

~~The certificate of insurance(s) will be included in Appendix B of the approved M&RP.~~

~~118 Filing Fees~~

~~Refer to the same section of the approved M&RP.~~

~~120 PERMIT APPLICATION FORMAT AND CONTENTS~~

~~This amendment submittal will comply with R645-301-120.~~

~~130 REPORTING OF TECHNICAL DATA~~

~~All technical data submitted in the amendment will be accompanied by the name or organization responsible for the collection and analysis of data, dates of collection and descriptions of methodology used. Technical analyses will be planned by or under the direction of a qualified professional in the subject to be analyzed.~~

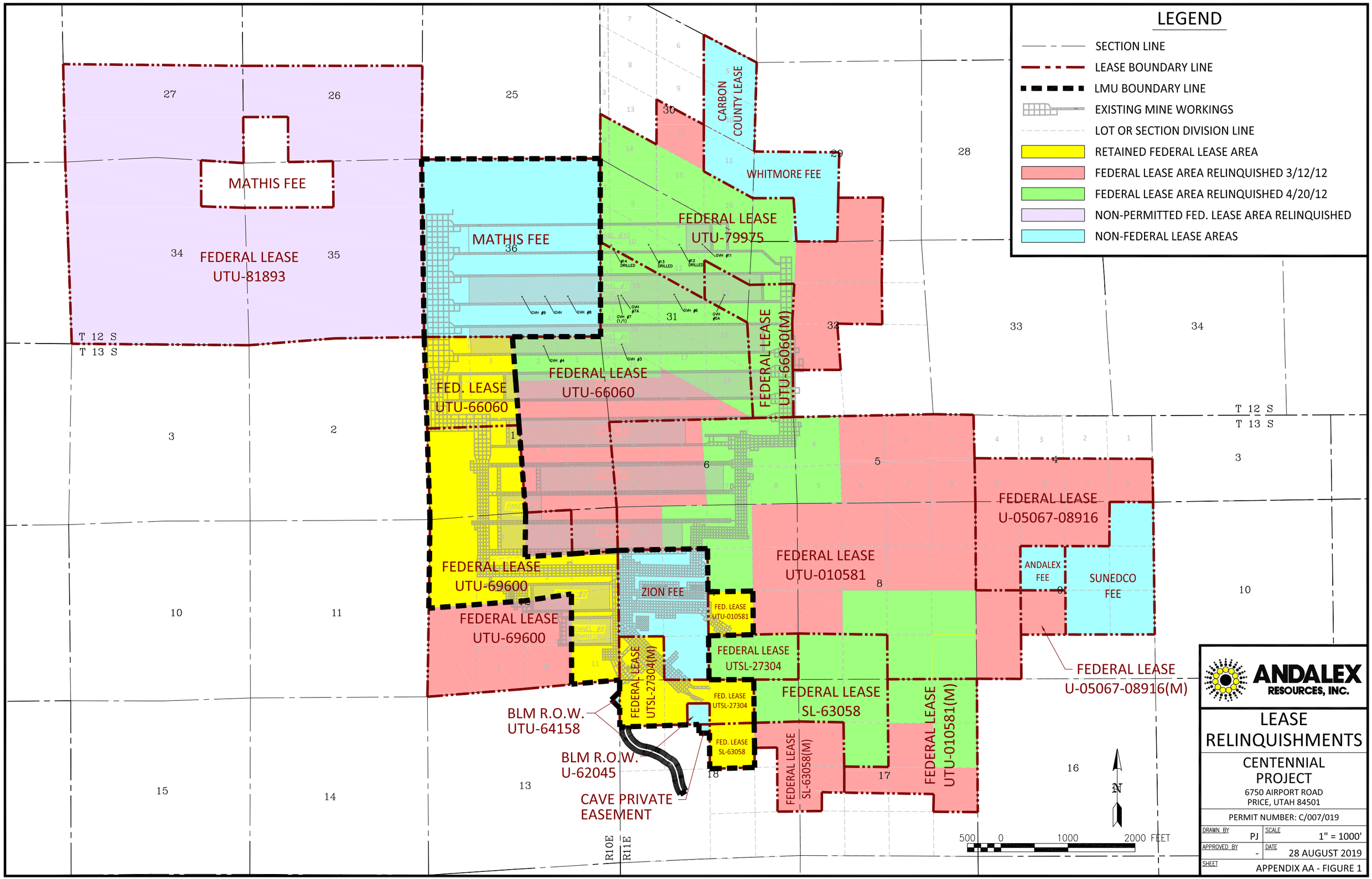
~~140 MAPS AND PLANS~~

~~The maps and plans in the Mining and Reclamation Plan will correspond with the requirements in R645-301-140.~~

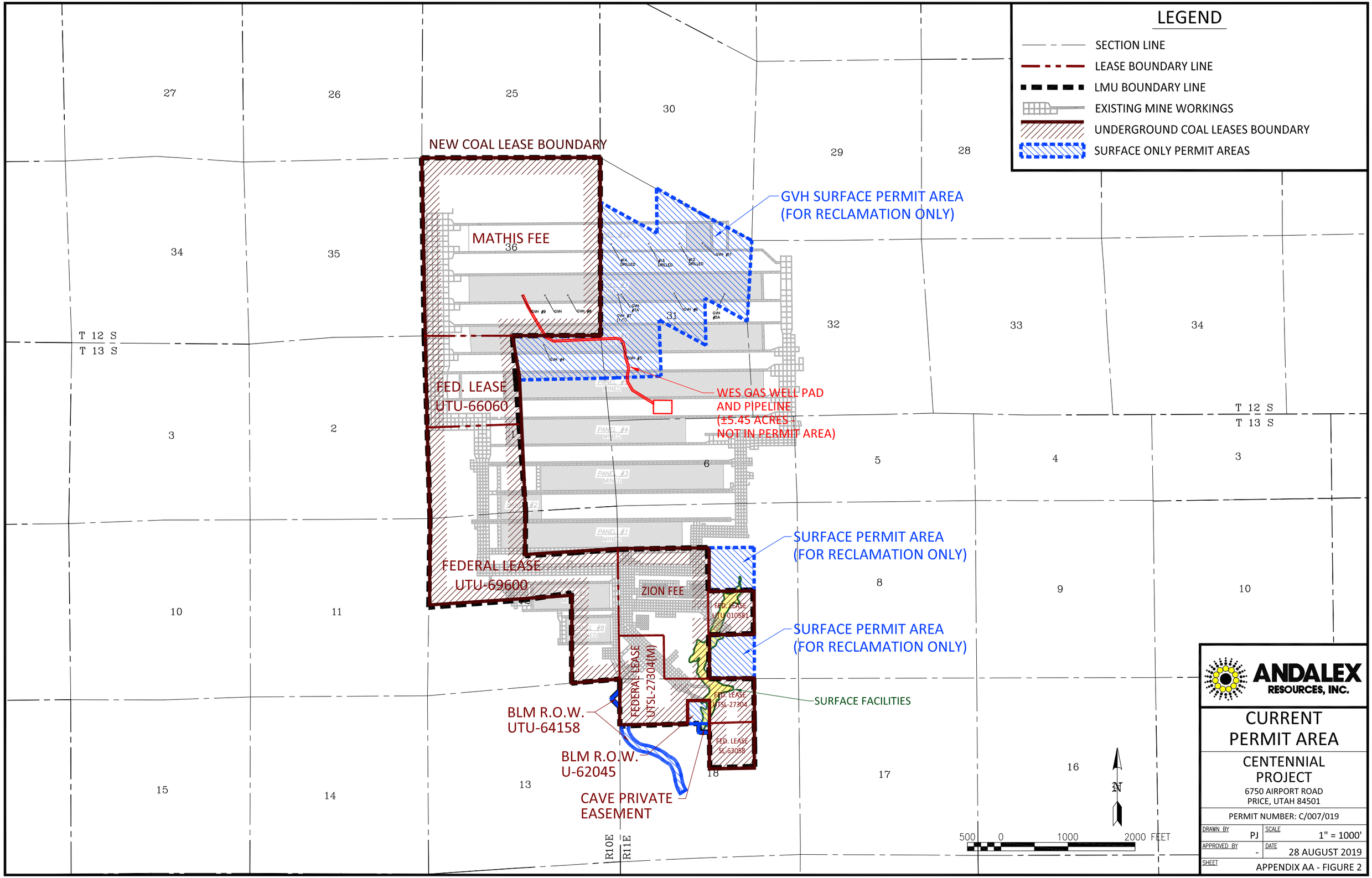
~~150 COMPLETENESS~~

~~Andalex Resources, Inc. believes the information in this permit application to be complete and correct.~~

2,281.19 acres



G:\Current Drawings\MRP Maps\Tower Mine\Tower Midterm 2019\Appendix AA Figure 1 - Lease History Map.dwg, Lease Relinquishments, 8/28/2019 1:03:17 PM



G:\Current Drawings\MRP Maps\Tower Mine\Tower Mlilterm 2019\Appendix AA Figure 1 - Lease History Map.dwg, Current Permit Area, 8/28/2019 1:01:54 PM

Tower Mine Reclamation Bond Estimate

BONDING CALCULATIONS

Direct Costs

Subtotal Demolition and Removal	$284,049.00	
Subtotal Backfilling and Grading	$364,970.00	
Subtotal Revegetation	$71,374.00	
Direct Costs in 2017 Dollars	**$720,393.00**	

Indirect Costs

Mob/Demob	$72,039.00	10.0%
Contingency	$36,020.00	5.0%
Engineering Redesign	$18,010.00	2.5%
Main Office Expense	$48,987.00	6.8%
Project Management Fee	$18,010.00	2.5%
Subtotal Indirect Costs 2017 Dollars	**$193,066.00**	**26.8%**
Total Cost	**$913,459.00**	
Escalation factor		0.0232
Number of years		5
Escalation	$110,993.00	
Total Reclamation Cost 2021 Dollars	**$1,024,452.00**	
Required Bond Amount (rounded to nearest $1,000)	**$1,024,000.00**	
2024 dollars		
Posted Bond	**$1,520,000.00**	
Difference Between Posted and Required Bond	**$496,000.00**	

Tower Mine Reclamation Bond Estimate

Unit Costs

All unit costs were obtained from RS Means 2019 Site Work and Landscape Costs, except as noted. All costs inlude overhead and profit.

Means Number	Material	Unit Cost	Units
Concrete Demo1	Concrete Demolition	11.72	CY
31 23 16.42 1300	Front End Loader 3 CY	2.15	CY
City Sanitation Price	City Sanitation	2.10	CY
02 41 16.13 0020	Building demo, steel	0.36	CF
02 41 13.60 1700	Chain link demo, posts & fabric remove only	4.42	LF
23 05 05.10 3600	Mechanical equip demo, heavy	1250.00	Ton
31 23 23.20 1025	12 CY Dump Truck, 10 mi cycle, 15 min wait	12.40	CY
02 41 16.17 4200	On Site Disposal	11.10	CY
JennChem	Seal Portals	4320.00	EA
JennChem	Labor	265.00	Hr
	Plug Wells	170.00	CY
	Plug Wells (Environmental Fee)	15.00	Load
02 41 16.13 0100	Building demo, mixture, average	0.39	CF
31 23 16.42 0260	Excavator, hydraulic, 2 CY	1.80	CY
31 23 16.13 3080	Backfill Trench, minimal haul 2-1/4 CY	2.49	CY
31 23 23.20 3014	16.5 CY Truck, 15 min wait, 0.5 mile cycle	2.71	CY
Centennial 001	Seed Mix - Centennial Drainage	378.32	AC
Centennial 002	Seed Mix - Centennial Slopes	314.97	AC
Centennial 003	Transplant Seedlings - Centennial Mine	1635.00	AC
32 92 19.14 0200	Hydroseeder (equip. & labor only)	27.84	MSF
32 92 13.16 0390	Power mulcher, large, hay 1" deep	30.50	MSF
31 23 23.14 4220	FE Loader, 200 HP, common earth, 150' haul	2.12	CY
02 41 13.66 0600	Metal gate demo, 4'-6'h x 3'-4'w	98.00	EA
02 41 13.62 0300	Chain link gate demo, 8'x15'	132.00	EA
32 91 12.23 3100	Scarify subsoil, large proj, 75 HP dozer	5.95	MSF
32 93 43.10 0560	Planting, seedlings, 3"-5" tall, medium soil	0.74	EA
Crew A-3A	Operator with pickup truck, 4x4	754.27	Day
Crew B-9A	5000 gallon water truck w opr & laborers	2060.98	Day
Crew B-10B	Dozer, 200 HP, w operator & laborer	194.08	HR
Crew B-10M	Dozer, 300 HP, w operator & laborer	243.68	HR
Crew B-10X	Dozer, 410 HP, w operator & laborer	283.82	HR
Crew B-12D	Hyd excavator, 3.5 CY, w opr and laborer	229.28	HR
Crew B-33H	S.P scraper, 44 CY, w dozer and operators	479.75	HR

Tower Mine Reclamation Bond Estimate

Demolition and Removal Cost Summary

Loadout Bin No. 01	2,880
Concrete No. 02	701
Reclaim No. 03	5,184
Conveyor No. 04	720
Hopper No. 05	2,160
Conveyor No. 06	2,340
Tunnel No. 07	3,110
Fan No. 08	1,152
Substation No. 09	2,960
Water Tank No. 10	339
Portals No. 11	1,152
Main Office No. 12	18,000
Bath House No. 13	8,919
Substation No. 14	5,200
Loadout Bin No. 15	4,057
Conveyor No. 16	1,152
Reclaim No. 17	829
Hopper No. 18	2,074
Conveyor No. 19	1,332
Tunnel No. 20	3,110
Water Tank No.21	508
Trailers No.23	4,840
Portals No. 24	6,254
Office No. 25	6,148
Portals No. 26	1,243
ShopWarehouse No. 27	73,342
Loadout No. 28	0
Conveyor No. 29	0
Reclaim No. 30	5,875
Hopper No. 31	3,318
Conveyor No. 32	1,800
Tunnel No. 33	4,320
Portals No. 34	21,019
Water Tank No. 35	339
Shed No. 36	1,440
Magazines No. 37	35
Substation No. 38	2,964
Office No. 39	4,173
Portals No. 40	12,920
Culverts 41	24,037
Vent Shaft Fan 45	41,575
Security gates 47	531
Gob Vent Wells	55,650
Aberdeen Substation	3,131
DEMO SUBTOTAL	284,049

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Loadout Bin No. 01																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	20	20	20										8000	CF	2880
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2880
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			2880

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Concrete No. 02																			
		Structure's Demolition Cost																			
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	11.72	CY	20	28	0.75								FT		16	CY	182
		Concrete's Vol. Demolished																1.3	20	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	CY													20	CY	43
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	31 23 23.20 1025	12.40	CY													20	CY	251
		Disposal Costs	On Site Disposal		11.10	CY													20	CY	224
		Subtotal																			701
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			701

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Reclaim No. 03																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	8	12	150										14400	CF	5184
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			5184
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			5184

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Conveyor No. 04																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	4	4	125										2000	CF	720
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			720
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			720

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Hopper No. 05																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	20	20	15										6000	CF	2160
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2160
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			2160

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Conveyor No. 06																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	5	5	260										6500	CF	2340
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2340
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			2340

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Tunnel No. 07																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	8	12	90										8640	CF	3110
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			3110
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			3110

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Fan No. 08																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	8	20	20										3200	CF	1152
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			1152
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			1152

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Substation No. 09																			
		Structure's Demolition Cost																			
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			
		Equipment's Disposal Cost	Mechanical equip demo, heavy	23 05 05.10 3600	1250.00	Ton										2	EA		2	EA	2500
		Equipment's Disposal Cost	Chain link demo, posts & fabric remove	02 41 13.60 1700	4.42	LF	104										FT		104	FT	460
		Subtotal																			2960
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			2960

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Water Tank No. 10																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF						941							941	CF	339
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			339
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			339

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Portals No. 11																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	20	20	8										3200	CF	1152
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			1152
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			1152

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Main Office No. 12																			
		Office Demolition Cost	Building demo, mixture, average	02 41 16.13 0100	0.39	CF	32	60	16										30720	CF	11981
		Trailer's Demolition Cost	Building demo, mixture, average	02 41 16.13 0100	0.39	CF	8	12	70										6720	CF	2621
			Building demo, steel	02 41 16.13 0020	0.36	CF						706					CF		706	CF	254
		Structure's Vol. Demolished																0.35	485	CY	
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel	City Sanitation	City Sanitation Price	2.10	CY													485	CY	1019
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			15875
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	11.72	CY						47.15					CY		47	CY	553
		Concrete's Vol. Demolished																1.3	61	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	CY													61	CY	132
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	31 23 23.20 1025	12.40	CY													61	CY	760
		Disposal Costs	Seal Portals		11.10	CY													61	CY	680
		Subtotal																			2125
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			18000

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Bath House No. 13																			
		Bath House 1's Demolition Cost	Building demo, mixture, average	02 41 16.13 0100	0.39	/CF	14	65	8										7280	CF	2,839
		Bath House 2's Demolition Cost	Building demo, mixture, average	02 41 16.13 0100	0.39	/CF	12	50	8										4800	CF	1,872
			Building demo, mixture, average	02 41 16.13 0100	0.39	/CF	12	42	8								FT		4032	CF	1,572
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	/CF						941				2	CF		1882	CF	678
		Structure's Vol. Demolished																			
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel	City Sanitation	City Sanitation Price	2.10	CY												0.35	209	CY	439
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition	Concrete Demolition	Concrete Demo1	11.72	/CY	14	65	0.5								FT		17	CY	198
		Demolition Cost																1.3	22	CY	
		Concrete's Vol. Demolished																	22	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	/CY													22	CY	47
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	31 23 23.20 1025	12.40	/CY													22	CY	272
		Disposal Costs	On Site Disposal		11.10	/CY													22	CY	243
		Subtotal																			
		Concrete Demolition	Concrete Demolition	Concrete Demo1	11.72	/CY	14	65	0.5								FT		17	CY	198
		Demolition Cost																1.3	22	CY	
		Concrete's Vol. Demolished																	22	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	/CY													22	CY	47
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	12 CY Dump Truck, 1	12.40	/CY													22	CY	272
		Disposal Costs	On Site Disposal		11.10	/CY													22	CY	243
		Subtotal																			
		Total																			8,919

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Substation No. 14																			
		Structure's Demolition Cost																			
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			
		Equipment's Disposal Cost	Mechanical equip demo, heavy	23 05 05.10 3600	1250.00	Ton										3	EA		3	EA	3750
		Equipment's Disposal Cost	Chain link demo, posts & fabric remove	02 41 13.60 1700	4.42	LF	328												328	LF	1450
		Subtotal																			5200
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			5200

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Loadout Bin No. 15																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	20	20	24										9600	CF	3456
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			3456
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	11.72	CY	20	24	0.75								FT		13	CY	156
		Concrete's Vol. Demolished																1.3	17	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	CY													17	CY	37
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	31 23 23.20 1025	12.40	CY													17	CY	215
		Disposal Costs	On Site Disposal		11.10	CY													17	CY	192
		Subtotal																			601
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			4057

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Conveyor No. 16																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	4	4	200										3200	CF	1152
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			1152
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			1152

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Reclaim No. 17																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	8	12	24										2304	CF	829
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			829
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			829

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Hopper No. 18																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	10	24	24										5760	CF	2074
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2074
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			2074

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Conveyor No. 19																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	4	5	185										3700	CF	1332
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			1332
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			1332

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Tunnel No. 20																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	8	12	90										8640	CF	3110
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			3110
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			3110

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Water Tank No.21																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF						1412							1412	CF	508
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			508
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			508

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Trailers No.23																			
		Structure's Demolition Cost	Building demo, mixture, ave	02 41 16.13 0100	0.39	CF	10	55	8								FT		4400	CF	1716
		Structure's Demolition Cost	Building demo, mixture, ave	02 41 16.13 0100	0.39	CF	10	50	8								FT		4000	CF	1560
			Building demo, mixture, ave	02 41 16.13 0100	0.39	CF	10	40	8								FT		3200	CF	1248
		Structure's Vol. Demolished																0.35	150	CY	
		Rubble's Weight (exclude steel)																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel	City Sanitation	City Sanitation Price	2.10	CY													150	CY	316
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			4840
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			4840

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit
		Portals No. 24																		
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	20	20	8										3200	CF
		Structure's Vol. Demolished																		
		Truck's Capacity																		
		Haulage																		
		Transportation Cost Non Steel Truck																		
		Transportation Cost Non Steel Drive																		
		Disposal Cost Non Steel																		
		Steel's Weight																		
		Truck's Capacity																		
		Haulage																		
		Transportation Cost Steel Truck																		
		Transportation Cost Steel Drive																		
		Disposal Cost steel																		
		Subtotal																		
		Portal Sealing																		
		Seal Construction			4320.00	Ea													1	Ea
		Labor			265.00	Hr.													2	Hr
		Portal Backfilling	FE Loader, 200 HP, common earth, 150'	31 23 23.14 4220	2.12	CY	20	20	8			119				1	Ea		119	CY
		Subtotal																		
		Concrete Demolition																		
		Demolition Cost																		
		Concrete's Vol. Demolished																		
		Loading Cost																		
		Transportation Cost																		
		Disposal Costs																		
		Subtotal																		
		Concrete Demolition																		
		Demolition Cost																		
		Concrete's Vol. Demolished																		
		Loading Cost																		
		Transportation Cost																		
		Disposal Costs																		
		Subtotal																		
		Total																		

Cost
1152
1152
4320
530
252
5102
6254

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Office No. 25																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	24	42	8										8064	CF	2903
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2903
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	11.72	CY	24	42	0.5								FT		72	CY	844
		Concrete's Vol. Demolished																1.3	94	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	CY													94	CY	201
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	31 23 23.20 1025	12.40	CY													94	CY	1161
		Disposal Costs	On Site Disposal		11.10	CY													94	CY	1039
		Subtotal																			3245
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			6148

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Portals No. 26																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	20	20	7										2800	CF	1,008
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			1,008
		Portal Sealing																			
		Seal Construction																			
		Labor																			
		Portal Backfilling	FE Loader, 200 HP, common earth, 150	31 23 23.14 4220	2.12	CY	20	6	25			111							111	CY	235
		Subtotal																			235
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			1,243

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		ShopWarehouse No. 27																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	150	60	18										162000	CF	58320
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			58320
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	11.72	CY	150	60	1								FT		333	CY	3907
		Concrete's Vol. Demolished																1.3	433	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	CY													433	CY	932
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	31 23 23.20 1025	12.40	CY													433	CY	5373
		Disposal Costs	Seal Portals		11.10	CY													433	CY	4810
		Subtotal																			15022
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			73342

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Loadout No. 28																			
		Structure's Demolition Cost	**MOVE TO LILA CANYON MINE**																		
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			0

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Conveyor No. 29	**MOVE TO LILA CANYON MINE**																		
		Structure's Demolition Cost																			0
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			0
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			0

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Reclaim No. 30																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	8	12	170										16320	CF	5875
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			5875
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			5875

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Hopper No. 31																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	24	24	16										9216	CF	3318
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			3318
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			3318

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Conveyor No. 32																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	5	4	250										5000	CF	1800
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			1800
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			1800

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Tunnel No. 33																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	8	12	125										12000	CF	4320
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			4320
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			4320

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit
		Portals No. 34																		
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	20	20	6										2400	CF
		Structure's Vol. Demolished																		
		Truck's Capacity																		
		Haulage																		
		Transportation Cost Non Steel Truck																		
		Transportation Cost Non Steel Drive																		
		Disposal Cost Non Steel																		
		Steel's Weight																		
		Truck's Capacity																		
		Haulage																		
		Transportation Cost Steel Truck																		
		Transportation Cost Steel Drive																		
		Disposal Cost steel																		
		Subtotal																		
		Portal Sealing																		
		Seal Construction			4320.00	Ea													4	Ea
		Labor			265.00	Hr													8	Hr
		Portal Backfilling	FE Loader, 200 HP, common earth, 150' h	31 23 23.14 4220	2.12	CY	20	20	6			89					CY		356	CY
		Concrete Demolition																		
		Demolition Cost																		
		Concrete's Vol. Demolished																		
		Loading Cost																		
		Transportation Cost																		
		Disposal Costs																		
		Subtotal																		
		Concrete Demolition																		
		Demolition Cost																		
		Concrete's Vol. Demolished																		
		Loading Cost																		
		Transportation Cost																		
		Disposal Costs																		
		Subtotal																		
			55650																	
		Total	#REF!																	

Cost
864
864
17280
2120
755
20155
21019

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Water Tank No. 35																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF					941								941	CF	339
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			339
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			339

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Shed No. 36																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	10	50	8										4000	CF	1440
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			1440
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			1440

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Magazines No. 37																			
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	4	4	6										96	CF	35
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			35
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			35

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Substation No. 38																			
		Structure's Demolition Cost	Mechanical equip demo, heavy	23 05 05.10 3600	1250.00	Ton										2	EA		2	Ea	2500
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			2500
		Equipment's Disposal Cost	Chain link demo, posts & fabric remove	02 41 13.60 1700	4.42	LF	105										FT		105	FT	464
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			464
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			2964

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Office No. 39																			
		Structure's Demolition Cost	Building demo, mixture, average	23 05 05.10 3600	0.39	CF	25	40	8										8000	CF	3120
		Structure's Vol. Demolished																0.35	104	CY	
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel	City Sanitation	City Sanitation Price	2.10	CY													104	CY	218
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			3338
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	11.72	CY	25	40	0.5								Ft		19	CY	217
		Concrete's Vol. Demolished																1.3	24	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	CY													24	CY	52
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	31 23 23.20 1025	12.40	CY													24	CY	299
		Disposal Costs	On Site Disposal		11.10	CY													24	CY	267
		Subtotal																			835
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			4173

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit
		Portals No. 40																		
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	20	25	8										4000	CF
		Structure's Demolition Cost	Building demo, steel	02 41 16.13 0020	0.36	CF	20	20	8										3200	CF
		Rubble's Weight (exclude steel)																		
		Truck's Capacity																		
		Haulage																		
		Transportation Cost Non Steel Truck																		
		Transportation Cost Non Steel Drive																		
		Disposal Cost Non Steel																		
		Steel's Weight																		
		Truck's Capacity																		
		Haulage																		
		Transportation Cost Steel Truck																		
		Transportation Cost Steel Drive																		
		Disposal Cost steel																		
		Subtotal																		
		Portal Sealing														2	EA			
		Seal Construction			4320.00	Ea													2	Ea
		Labor			265.00	Hr													4	Hr
		Portal Backfilling	FE Loader, 200 HP, common earth, 150'	31 23 23.14 4220	2.12	CY	20	25	8			148					CY		296	CY
		Subtotal																		
		Concrete Demolition																		
		Demolition Cost																		
		Concrete's Vol. Demolished																		
		Loading Cost																		
		Transportation Cost																		
		Disposal Costs																		
		Subtotal																		
		Concrete Demolition																		
		Demolition Cost																		
		Concrete's Vol. Demolished																		
		Loading Cost																		
		Transportation Cost																		
		Disposal Costs																		
		Subtotal																		
		Total																		

Cost
1440
1152
2592
8640
1060
628
10328
12920

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Culverts 41																			
		12" culvert remove	Excavator, hydraulic, 2 CY	31 23 16.42 0260	1.80	CY	260	4	2								FT		77	CY	139
		12" culvert backfill	Backfill Trench, minimal haul 2-1/4 CY	31 23 16.13 3080	2.49	CY													77	CY	192
		18" culvert backfill	Excavator, hydraulic, 2 CY	31 23 16.42 0260	1.80	CY	1340	4	3								FT		596	CY	1072
		18" culvert backfill	Backfill Trench, minimal haul 2-1/4 CY	31 23 16.13 3080	2.49	CY													596	CY	1483
		24" culvert remove	Excavator, hydraulic, 2 CY	31 23 16.42 0260	1.80	CY	330	4	4								FT		196	CY	352
		24" culvert backfill	Backfill Trench, minimal haul 2-1/4 CY	31 23 16.13 3080	2.49	CY													196	CY	487
		36" culvert remove	Excavator, hydraulic, 2 CY	31 23 16.42 0260	1.80	CY	1885	4	6								FT		1676	CY	3016
		36" culvert backfill	Backfill Trench, minimal haul 2-1/4 CY	31 23 16.13 3080	2.49	CY													1676	CY	4172
		42" culvert remove	Excavator, hydraulic, 2 CY	31 23 16.42 0260	1.80	CY	2950	4	7								FT		3059	CY	5507
		42" culvert backfill	Backfill Trench, minimal haul 2-1/4 CY	31 23 16.13 3080	2.49	CY													3059	CY	7618
		Subtotal																			24037
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
			55650																		
		Total	#REF!																		24037

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Vent Shaft Fan 45																			
		Structure's Demolition Cost																			
		Structure's Vol. Demolished							370	16									2755	CY	
																		1.2	3306	CY	
		Number of trips																			
		Transportation Cost Truck	16.5 CY Truck, 15 min wait, 0.5 mile cycle	31 23 23.20 3014	2.71	CY													3306	CY	8959
		Place Backfill	Excavator, hydraulic, 2 CY	31 23 16.42 0260	1.80	CY													3306	CY	5951
		Backfill at pit	FE Loader, 200 HP, common earth, 150' haul	31 23 23.14 4220	2.12	CY													3306	CY	7009
		Subtotal																			21919
		Fan																			
		Dismantling Cost	Mechanical equip demo, heavy	23 05 05.10 3600	1250.00	Ton										5	Ton		5	Ton	6250
		Transformer																			
		Dismantling Cost	Mechanical equip demo, heavy	23 05 05.10 3600	1250.00	Ton										2	Ton		2	Ton	2500
		Subtotal																			8750
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	11.72	CY						242					CY		242	CY	2836
		Concrete's Vol. Demolished																1.3	315	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	CY													315	CY	676
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	31 23 23.20 1025	12.40	CY													315	CY	3901
		Disposal Costs	On Site Disposal		11.10	CY													315	CY	3492
		Subtotal																			10906
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			41575

Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
Metal Gates	02 41 13.66 0600	66.25	CF		3'-4'	4'-6'										4		265
Metal Gates	02 41 13.62 0300	88.5			15'	8'										3		266
Labor is included with cost																		
																		531

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length Avg.	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Gob Vent Holes 8, 8A, and 9																			
		Structure's Demolition Cost	Mechanical equip demo, heav	23 05 05.10 3600	1250.00	Ton							4			3	EA		12	Ton	15000
		Plug Well	Plug Wells		170.00	CY	2721			1		79				3	EA		237	CY	40290
		Plug Wells (Environmental Fee)	Plug Wells		15.00	Load													24	Load	360
		Gob Vent Wells 1,5,and 6 have been reclaimed																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			55650
		Equipment's Disposal Cost																			
		Dismantling Cost																			
		Equipment's Vol. Demolished																			
		Loading Costs																			
		Transport Costs																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			55650

Ref.	Task	Description	Materials	Means Reference Number	Unit Cost		Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
		Aberdeen Substation																			
		Structure's Demolition Cost																			
		Structure's Vol. Demolished																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Non Steel Truck																			
		Transportation Cost Non Steel Drive																			
		Disposal Cost Non Steel																			
		Steel's Weight																			
		Truck's Capacity																			
		Haulage																			
		Transportation Cost Steel Truck																			
		Transportation Cost Steel Drive																			
		Disposal Cost steel																			
		Subtotal																			
		Dismantling Cost	Chain link demo, posts & fabric remove only	02 41 13.60 1700	4.42	LF	105										LF		105	LF	464
		Transformer																			
		Dismantling Cost	Mechanical equip demo, heavy	23 05 05.10 3600	1250.00	Ton							2				Ton		2	Ton	2500
		Subtotal																			2964
		Concrete Demolition																			
		Demolition Cost	Concrete Demolition	Concrete Demo1	11.72	CY	10	10	1								FT		4	CY	43
		Concrete's Vol. Demolished																1.3	5	CY	
		Loading Cost	Front End Loader 3 CY	31 23 16.42 1300	2.15	CY													5	CY	10
		Transportation Cost	12 CY Dump Truck, 10 mi cycle, 15 min wait	31 23 23.20 1025	12.40	CY													5	CY	60
		Disposal Costs	On Site Disposal		11.10	CY													5	CY	53
		Subtotal																			167
		Concrete Demolition																			
		Demolition Cost																			
		Concrete's Vol. Demolished																			
		Loading Cost																			
		Transportation Cost																			
		Disposal Costs																			
		Subtotal																			
		Total																			3131

Tower Mine Reclamation Bond Estimate

Earthwork Costs

Description	Quantity	Units	Production Rate	Units	Production Time	Units
Mine Site Earthwork Estimate						
Backfill and Grade Pond, Canyon, and Bench Areas						
D9R Semi-U EROPS	81812	CY	241	CY/HR	339.5	HR
Backfill and Grade Benches, Outslopes and Highwalls						
627G Scraper with D9 Dozer	81812	CY	330	CY/HR	247.9	HR
Rip Area to be Topsoiled (32.12 acres)						
D7R Semi-U EROPS	1399	MSF	240	MSF/Day	5.8	Day
Haul and Spread Topsoil						
627G Scraper with D9 Dozer	27588	CY	330	CY/HR	83.6	HR
Pock Topsoiled Area (Half of placed topsoil)						
325L Excavator	13794	CY	300	CY/HR	46	HR
Gob Vent Holes 8, 8A, and 9						
Backfill disturbed area (D7R dozer)	2000	CY	175	CY/HR	11.4	HR
Rip area to be topsoiled (D7R dozer)	131	MSF	240	MSF/Day	0.5	HR
Spread topsoil (D7R dozer)	6400	CY	175	CY/HR	36.6	HR
Pock topsoiled area (325L excavator)	3200	CY	300	CY/HR	10.7	HR
Support						
Foreman with pickup truck						
Water Truck						
EARTHWORK SUBTOTAL						

Materials/Equipment/Labor	Cost Reference RSMeans Ref #	Unit Cost	Units	Quantity
Dozer, 410 HP, w operator & laborer	Crew B-10X	283.82	HR	339.5
S.P scraper, 44 CY, w dozer and operators	Crew B-33H	479.75	HR	247.9
Scarify subsoil, large proj, 75 HP dozer	32 91 12.23 3100	5.95	MSF	1399
S.P scraper, 44 CY, w dozer and operators	Crew B-33H	479.75	HR	83.6
Hyd excavator, 3.5 CY, w opr and laborer	Crew B-12D	229.28	HR	46
Dozer, 200 HP, w operator & laborer	Crew B-10B	194.08	HR	11.4
Scarify subsoil, large proj, 75 HP dozer	32 91 12.23 3100	5.95	MSF	0.5
Dozer, 200 HP, w operator & laborer	Crew B-10B	194.08	HR	36.6
Hyd excavator, 3.5 CY, w opr and laborer	Crew B-12D	229.28	HR	10.7
Operator with pickup truck, 4x4	Crew A-3A	754.27	Day	50.0
5000 gallon water truck w opr & laborers	Crew B-9A	2060.98	Day	20.0

Cost
$96,357
$118,930
$8,324
$40,107
$10,547
$2,213
$3
$7,103
$2,453
$37,714
$41,220
$364,970

Tower Mine Reclamation Bond Estimate

Revegetation Costs

Descrip	Materials	Means Reference Number	Unit Cost	Unit	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
Mine Site Revegetation Estimate															
Mulch M	Power mulcher, large, hay 1" deep	32 92 13.16 0390	30.50	MSF	32.12						ac		1399	MSF	1983
Seeding	Centennial Mix 001 (see below)	Centennial 001	378.32	AC	17.55						ac		17.55	AC	6639
Seeding	Centennial Mix 002 (see below)	Centennial 002	314.97	AC	14.57						ac		14.57	AC	4589
Transpl	Centennial Mix 003 (see below)	Centennial 003	1635.00	AC	2.08						ac		2.08	AC	3401
Seeding	Hydroseeder (equip. & labor only)	32 92 19.14 0200	27.84	MSF	32.12						ac		1399	MSF	38948
Transpl	Planting, seedlings, 3"-5" tall, medium soil	32 93 43.10 0560	0.74	EA	2.08						ac		2080	EA	1539
Subtotal															**57,099**
Mine Site															
Re-revegetate 25% of area															14275
Subtotal															**14,275**
REVEGETATION SUBTOTAL															**71,374**

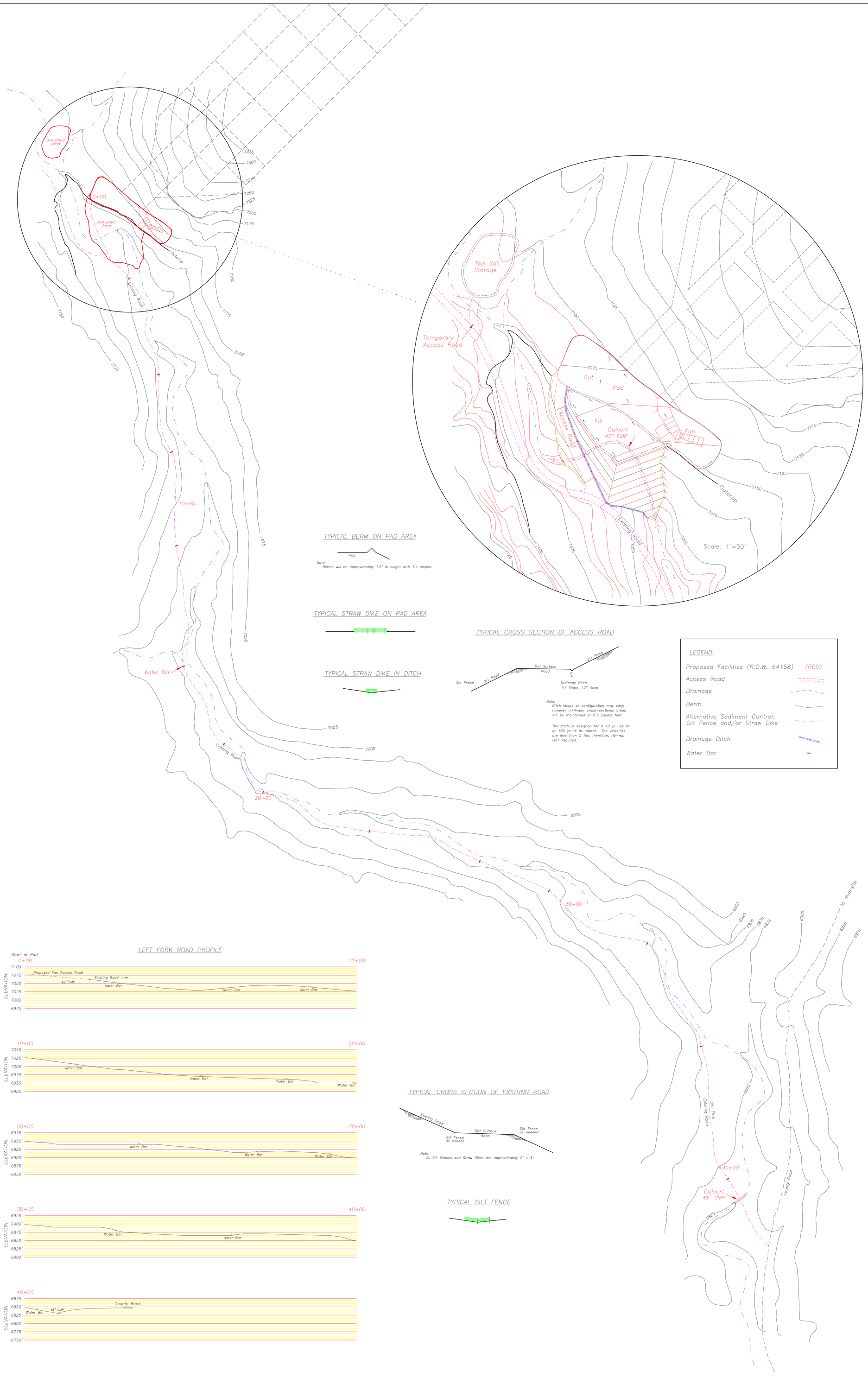
Seed mix cost based on the species and application rates provided on pages 3-21 and 3-22 of the Centennial MRP. Seed prices downloaded August 2019 from greatbasinseeds.com.

Common Name	Seeding Rate (lb PLS/ac)	Unit Cost ($/lb)	Mix Cost ($/ac)
Centennial 001 - Slope Mix			
Grasses			
Western Wheatgrass	3.00	5.95	17.85
Indian Ricegrass	2.00	6.95	13.90
Mountain Brome	3.00	4.25	12.75
Sandberg Bluegrass	0.25	8.50	2.13
Bluebunch Wheatgrass	2.00	8.95	17.90
Slender Wheatgrass	2.00	2.95	5.90
Forbs			
Lewis Flax	1.00	14.50	14.50
Rocky Mountain Penstemon	0.25	19.50	4.88
Louisiana Sagebrush	0.10	18.00	1.80
Northern Sweetvetch	1.00	75.00	75.00
Yellow Sweetclover	0.50	2.85	1.43
Shrubs			
Mountain Big Sagebrush	0.20	18.50	3.70
Serviceberry	1.00	59.00	59.00
Curlleaf Mountain Mahogany	1.00	38.00	38.00
True Mountain Mahogany	1.00	38.00	38.00
Whitestem Rubber Rabitbrush	1.00	18.00	18.00
Bitterbrush	3.00	19.00	57.00
Mountain Snowberry	1.00	49.00	49.00
		Subtotal =	360.30
		5% increase to account for PLS requirement =	18.02
		Slope seed mix unit cost =	378.32
Centennial 002 - Drainage Mix			
Grasses			
Western Wheatgrass	2.00	5.95	11.90
Great Basin Wildrye	2.00	16.95	33.90
Mountain Brome	3.00	4.25	12.75
Sandberg Bluegrass	0.10	8.50	0.85
Reed Canarygrass	0.50	6.95	3.48
Slender Wheatgrass	2.00	2.95	5.90
Forbs			
Yarrow	0.10	39.00	3.90
Sweet Anise	2.00	19.00	38.00
Louisiana Sagebrush	0.10	18.00	1.80
Northern Sweetvetch	1.00	75.00	75.00
Yellow Sweetclover	0.50	2.85	1.43
Shrubs			
Mountain Big Sagebrush	0.10	18.50	1.85
Serviceberry	1.00	59.00	59.00

Transplant seedling species and rates based on the table provided on page 3-22 of the MRP. Prices downloaded August 2019 from porkyfarm.com.

Common Name	Planting Rate (#/ac)	Unit Cost ($ Each)	Plant Cost ($/ac)
Centennial 003 - Transplant Seedlings			
Narrowleaf Cottonwood	250	3.20	800.00
Box Elder	250	0.70	175.00
Chokecherry	250	0.85	212.50
Gambel Oak	250	0.70	175.00
		Subtotal =	1362.50
		Shipping (20% of subtotal) =	272.50
		Transplant seedling cost =	1635.00

Squawbush	1.00	21.00	21.00
Blue Elderberry	1.00	49.00	49.00
Mountain Snowberry	1.00	49.00	49.00
		Subtotal =	299.98
		5% increase to account for PLS requirement =	15.00
		Drainage seed mix unit cost =	314.97



TYPICAL BERM ON PAD AREA

Note:
Berms will be approximately 1.5' in height with 1:1 slopes.

TYPICAL STRAW DIKE ON PAD AREA

TYPICAL STRAW DIKE IN DITCH

TYPICAL CROSS SECTION OF ACCESS ROAD

Note:
Ditch shape or configuration may vary; however minimum cross-sectional areas will be maintained at 0.5 square feet.

The ditch is designed for a 10 yr.-24 hr. or 100 yr.-6 hr. storm. The velocities are less than 5 fps; therefore, rip-rap isn't required.

LEGEND:

- Proposed Facilities (R.O.W. 64158) (RED)
- Access Road
- Drainage
- Berm
- Alternative Sediment Control: Silt Fence and/or Straw Dike
- Drainage Ditch
- Water Bar

LEFT FORK ROAD PROFILE

TYPICAL CROSS SECTION OF EXISTING ROAD

Note:
All Silt Fences and Straw Dikes are approximately 2' x 3'.

TYPICAL SILT FENCE

N

ANDALEX RESOURCES, INC.
Tower Division

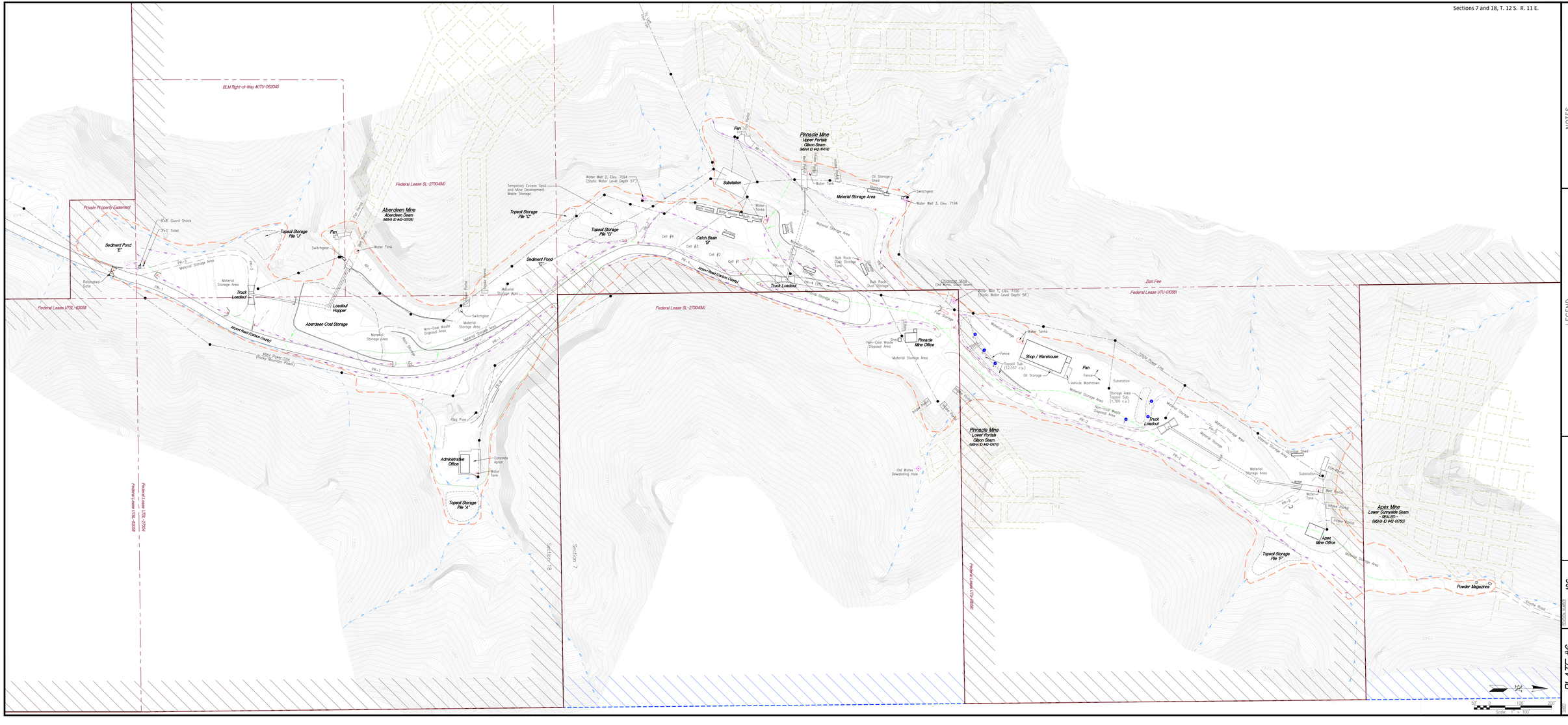
Aberdeen Mine
Left-Hand Fork
Fan Installation
Sedimentation/
Drainage Control

SCALE: 50' 0' 100' 200'

ACAD REF: LF-1

July 10, 1995

Sections 7 and 18, T. 12 S. R. 11 E.



NOTES

1. See Plates 11 & 12 for Sediment Pond Details.
2. Primary Roads are designated by "PR-1", etc.
3. Ancillary Roads are designated by "AR-1", etc.
4. See Plate 8 for surface drainage information.

LEGEND

- Soil Sample Location
- Power Pole
- Disturbed Surface Boundary
- Lease Boundary
- Undisturbed Surface Drainage
- Undisturbed Surface Drainage (Diversion Ditch)
- Disturbed Drainage Culvert
- Power Line
- Permit Area Disturbed Area
- Permit Boundary
- Permit Boundary - Surface Only

ANDALEX RESOURCES, INC.
Tower Division

CENTENNIAL PROJECT
6750 AIRPORT ROAD
PRICE, UTAH 84501

PLATE #6

DRAWING NUMBER 106

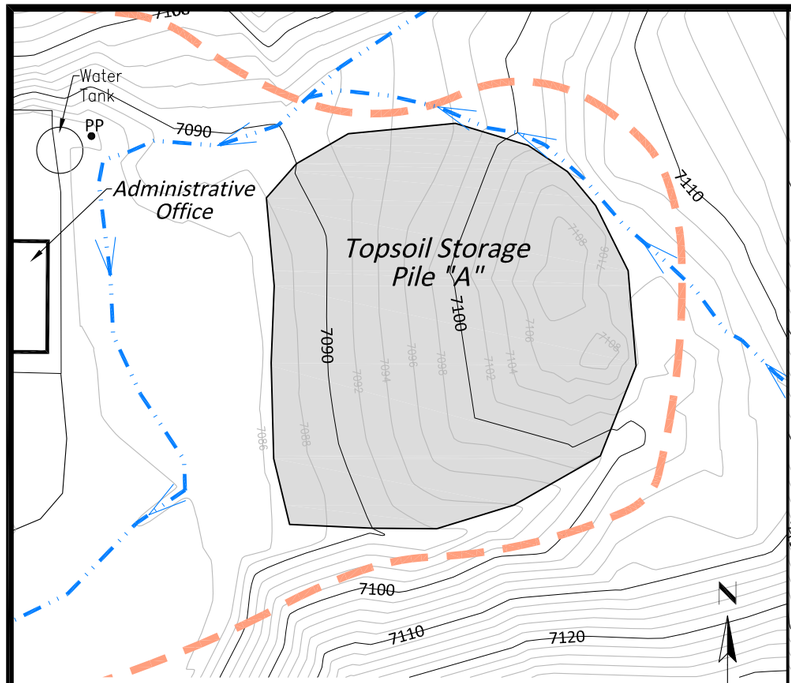
AS-CONSTRUCTED SURFACE FACILITIES

SCALE 1" = 100'

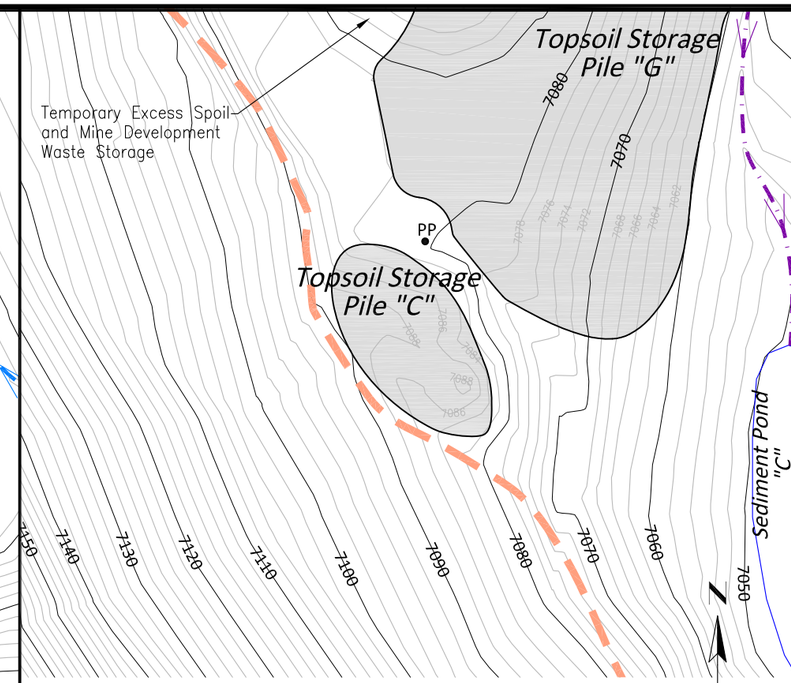
DRAWN BY PJ

DATE AUGUST 2019

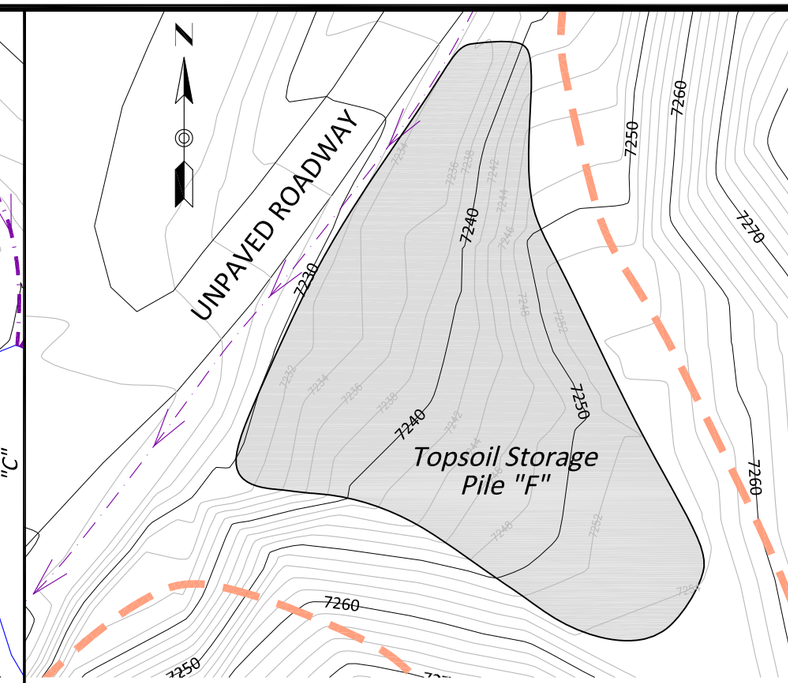
REVISED BY KM



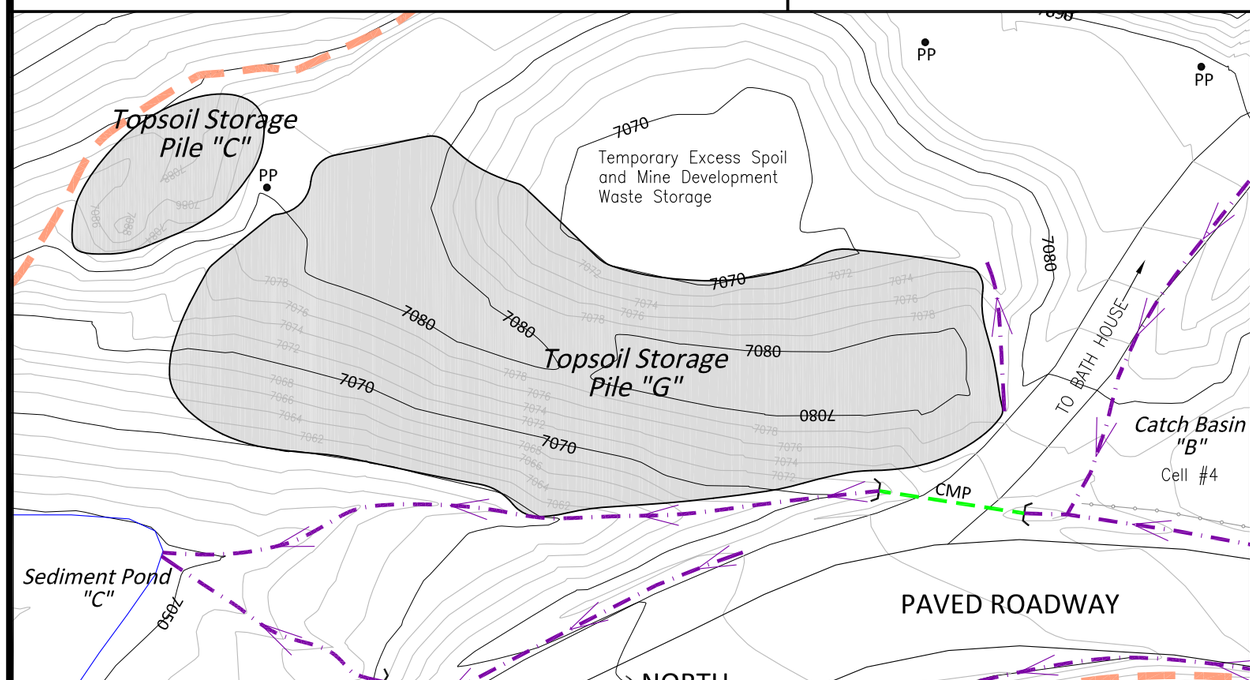
TOPSOIL PILE 'A'
35,731 c.f. (1,323 c.y.)
SCALE: 1" = 40'-0"
CONTOUR INTERVAL: 2'-0"



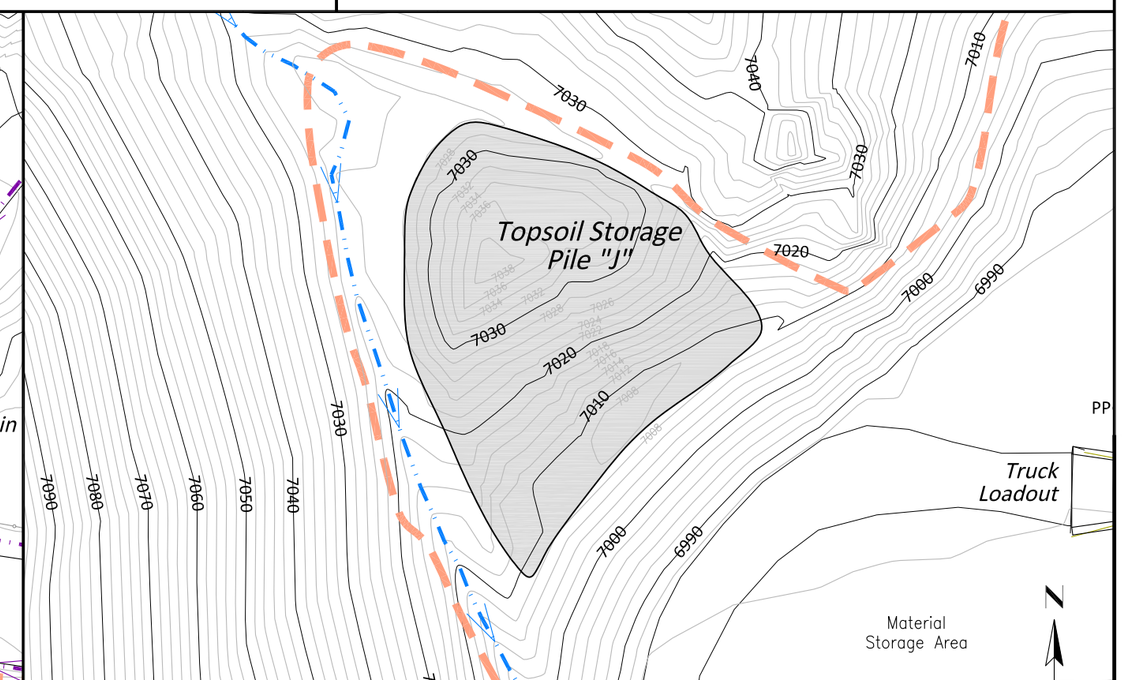
TOPSOIL PILE 'C'
6,829 c.f. (253 c.y.)
SCALE: 1" = 40'-0"
CONTOUR INTERVAL: 2'-0"



TOPSOIL PILE 'F'
60,290 c.f. (2,233 c.y.)
SCALE: 1" = 40'-0"
CONTOUR INTERVAL: 2'-0"



TOPSOIL PILE 'G'
167,980 c.f. (6,221 c.y.)
SCALE: 1" = 40'-0"
CONTOUR INTERVAL: 2'-0"



TOPSOIL PILE 'J'
94,500 c.f. (3,500 c.y.)
SCALE: 1" = 40'-0"
CONTOUR INTERVAL: 2'-0"

CENTENNIAL PROJECT
TOP SOIL STORAGE PILES IN DEADMAN CANYON

PLATE 37

DATE 29 AUG. 2019
REVISION NUMBER 3

NOTE:
SEE PLATE 6 FOR TOPSOIL PILE LOCATIONS.

Disturbed Surface Boundary
Disturbed Surface Drainage
Undisturbed Surface Drainage (Diversion Ditch)
Disturbed Drainage Culvert

ANDALEX RESOURCES, INC.
TOWER DIVISION
PRICE, UTAH

G:\Current Drawings\MRP Maps\Tower Mine\Tower Midterm 2019\Plate 37 - Top Soil Storage Piles.dwg, Plate 37, 8/29/2019 4:03:31 PM