



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

2890
UTU-64158
(U-066)

Moab District
Price River Resource Area
900 North 700 East
Price, Utah 84501

CERTIFIED MAIL--RETURN RECEIPT REQUESTED
Certification No. 060 435 539

JAN 5 1990

NOTICE

Andalex Resources Incorporated	:	Right-of-Way Application
P. O. Box 902	:	UTU-64158
Price, Utah 84501	:	

Right-of-Way Grant Offered; Stipulations Required Advance Rental Required

On December 6, 1988, Anda application UTU-64158 for County, Utah.

The Bureau of Land Manage right-of-way referenced a terms, conditions, and st the enclosed grant. This described in the document BLM authorized officer. you when signed.

Section 4a of the enclose the regulations contained (CFR) part 2800. These r or not they are specifica with 43 CFR 2800 before e

Regulations at 43 CFR 280 market value rental as de

Daron -

I gave you back a copy of the fan portal amendment (Andalex), but I think I left this out.

Paul.

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT

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NOTICE

Andalex Resources Incorporated : Right-of-Way Application
P. O. Box 902 : UTU-64158
Price, Utah 84501 :

Right-of-Way Grant Offered; Stipulations Required Advance Rental Required

On December 6, 1988, Andalex Resources Incorporated filed right-of-way application UTU-64158 for a mine site facility, on public lands in Carbon County, Utah.

The Bureau of Land Management proposes to issue the enclosed grant for the right-of-way referenced above. If you are in agreement with the proposed terms, conditions, and stipulations, please execute and return two copies of the enclosed grant. This grant, along with the authority to use the lands described in the document, becomes effective on the date it is signed by the BLM authorized officer. A copy of the right-of-way grant will be returned to you when signed.

Section 4a of the enclosed right-of-way grant incorporates by reference all of the regulations contained in Chapter 43 of the Code of Federal Regulations (CFR) part 2800. These regulatory provisions are mandatory and apply whether or not they are specifically mentioned in the grant. You should be familiar with 43 CFR 2800 before executing the grant.

Regulations at 43 CFR 2803.1-2 require the right-of-way holder to pay fair market value rental as determined by the authorized officer.

Pending formal appraisal, the advance rental deposit is \$25.00.

The regulations at 43 CFR 2808.4 require the holder of a right-of-way to reimburse the United States for costs incurred in monitoring the construction, operation, maintenance, and termination of the authorized facilities on the right-of-way, and the protection and rehabilitation of the lands involved. The monitoring fee of \$100.00 has been paid.

You are allowed thirty (30) days from receipt of this notice to sign and return both copies of the grant and required payment(s) (please make check payable to the Department of the Interior - BLM) or the application shall be rejected in its entirety.

If you have any questions, please feel free to contact Mark Mackiewicz of my staff at (801) 637-4584.



Area Manager

Acting

Enclosure:
Proposed Grant (in duplicate)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RIGHT-OF-WAY GRANT/TEMPORARY USE PERMIT

Issuing Office

Moab District, Price River R.A.

Serial Number

UTU-64158

1. A (right-of-way) (permit) is hereby granted pursuant to:

- a. Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761);
- b. Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185);
- c. Other (describe) _____

2. Nature of Interest:

- a. By this instrument, the holder Andalex Resources Incorporated receives a right to construct, operate, maintain, and terminate a n access road, two portals, pad site, & two coal tunnels on public lands (or Federal land for MLA Rights-of-Way) described as follows:

Salt Lake Meridian, Utah
T. 13 S., R. 10 E., Sec. 13, Lot 1.
T. 13 S., R. 11 E., Sec. 18, Lot 2, NE4SW4.

- b. The right-of-way granted herein for an access road is 16 feet in width, 3000 feet in length encompassing 1.00 acres more or less, pad site is 70 feet in width and 250 feet in length encompassing 0.40 acres more or less, and two coal tunnels approximately 70 feet in length, 20 feet in width and 7 feet in height, and one 30 feet in length, 20 feet in width and 7 feet in height encompassing 0.05 acres more or less.

- b. The right-of-way or permit area granted herein is _____ feet wide, _____ feet long and contains _____ acres, more or less. If a site type facility, the facility contains _____ acres.
- c. This instrument shall terminate on January 10, 2020, thirty (30) years from its effective date unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.
- d. This instrument may may not be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.
- e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.

3. Rental:

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions:

- a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations parts 2800 and 2880.
- b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands within --- days, or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.
- c. Each grant issued pursuant to the authority of paragraph (1)(a) for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.
- d. The stipulations, plans, maps, or designs set forth in Exhibit(s) A & B, dated JAN 5 1990, attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.
- e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.
- f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.

IN WITNESS WHEREOF, The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

Samuel C. Duzilek
(Signature of Holder)

[Signature]
(Signature of Authorized Officer)

General Manager
(Title)

Acting Area Manager
(Title)

1-9-90
(Date)

January 11, 1990
(Effective Date of Grant)

Exhibit A
Stipulations

JAN 25 1990

1. The holder shall comply with applicable Federal and State laws and regulations issues thereunder, existing or hereafter enacted or promulgated, affecting in any manner construction, operation, maintenance or termination of facilities located on the right-of-way to include all applicable regulations in 30 CFR Chapter VII and regulations developed to implement the Coal Mining Reclamation Act of 1978 (U.C.A. 40-10-1 et.seq.) Chapter I Parts U.M.C. 700-845.
2. The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the Andalex Resources Mining and Reclamation Plan (approved 1/4/82) (renewed 3/2/87) and the "Aberdeen Mine Revision" to the approved mine plan (ACT/007/019). Any relocation, additional construction, or use that is not in accord with the approved plan(s), shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way grant, including all stipulations and approved plan(s) of development, shall be made available on the right-of-way area during construction, operation, and termination. Noncompliance with the above will be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.
3. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2803.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from fire or soil movement (including landslides and slumps, as well as wind and water-caused movement of particles) caused or substantially aggravated by any of the following within the right-of-way or permit area.
4. The holder shall insure that the bond securing coal lease SL-027304 is modified to include the underground portion of right-of-way UTU-64158, prior to moving onto the right-of-way area. Written documentation noting this change shall be presented to the authorized officer.
5. The holder shall follow all provisions of its revised Resource Recovery and Protection Plan (R₂P₂) covering coal lease SL-027304 in removal of coal from the right-of-way.
6. The holder shall pay fair market value for the coal removed in the construction of the tunnels. Fair market value is determined to be the difference between the actual mining costs and the selling price of the coal at the mine by not less than eight (8) percent of the value of the coal at the mine. Mining cost will include only the actual extractive costs at the mine and will not include capital investments relating to permanent mine development or offsite administrative costs. Coal tonnage removed will be determined by volumetric calculation or actual mine weights provided by the holder. The holder shall provide information as to the contracted price of coal sold and estimated per ton mining cost. Payment of all coal shall be made within thirty (30) days after billing by the authorized officer.

7. The holder shall contact the authorized officer at least fourteen (14) days prior to the anticipated start of construction and/or any surface disturbing activities. The authorized officer may require and schedule a preconstruction conference with the holder prior to the holder's commencing construction and/or surface disturbing activities on the right-of-way. The holder and/or his representative shall attend this conference. The holder's contractor, or agents involved with construction and/or any surface disturbing activities associated with the right-of-way, shall also attend this conference to review the stipulations of the grant including the plan(s) of development.

8. The holder shall not initiate any construction or other surface disturbing activities on the right-of-way without the prior written authorization of the authorized officer. Such authorization shall be a written notice to proceed issued by the authorized officer. Any notice to proceed shall authorize construction or use only as therein expressly stated and only for the particular location or use therein described.

9. The authorized officer may suspend or terminate in whole, or part, any notice to proceed which has been issued when, in his judgment, unforeseen conditions arise which result in the approved terms and conditions being inadequate to protect the public health and safety or to protect the environment.

10. The holder shall designate a representative(s) who shall have the authority to act upon and to implement instructions from the authorized officer. The holder's representative shall be available for communication with the authorized officer within a reasonable time when construction or other surface disturbing activities are underway.

11. The holder shall conduct all activities associated with construction, operation, and termination of the right-of-way within the authorized limits of the right-of-way.

12. The holder shall complete a cultural and historic clearance of the right-of-way prior to initiation of construction. All persons in the area who are associated with the project will be informed by the holder that they will be subject to prosecution for disturbing archaeological sites or collecting artifacts. If subsurface cultural material is exposed during construction, work at that spot will stop immediately and the BLM, Price River Resource Area Office will be contacted (phone (801) 637-4584). The holder will be responsible for the cost of evaluation of the discovery and proper mitigation measures. Any decision as to proper mitigation shall be made by the authorized officer after consulting with the holder.

13. Prior to construction an inventory of the project area will be conducted by the authorized officer to determine the presence of the plant Hedysarum occidentale var. canone. A Notice to Proceed will not be issued until this clearance has been made and a satisfactory mitigation plan developed if necessary.

14. The holder shall not conduct construction activities within 0.5 miles or a designated buffer zone from active raptor nest sites during the nesting period, February 15 to July 15. Buffer zones and or adjustments to the nesting period will be determined by the authorized officer in consultation with the United States Fish and Wildlife Service (USFWS) and the Utah Division of Wildlife Resources (UDWR).
15. The holder shall ensure that no new access road construction is within line-of-sight of the raptor nests identified within 0.5 miles of the proposed road. Prior to road construction the authorized officer shall be afforded the opportunity to inspect the flagged access road.
16. The holder shall conduct all routine maintenance work on the access road except required snow removal, during the period of July 1 to December 1 to minimize impacts to raptors, mule deer and elk.
17. The holder shall restrict construction of all above ground facilities authorized under this right-of-way during the period of December 1 through April 15 to minimize impacts to wintering deer and elk.
18. The holder shall furnish and install culverts of the gauge, materials, diameter(s), and length(s) indicated and approved by the authorized officer. Culverts shall be free of corrosion, dents, or other deleterious conditions. Culverts shall be placed on channel bottoms on firm, uniform beds which have been shaped to accept them and aligned to minimize erosion. Backfill shall be thoroughly compacted. No equipment shall be routed over a culvert until backfill depth is adequate to protect the culverts.
19. The holder shall maintain the right-of-way in a safe, usable condition, as directed by the authorized officer. (A regular maintenance program shall include, but is not limited to, blading, ditching, culvert installation, and surfacing).
20. The holder shall seed all disturbed areas with the seed mixture(s) to be developed in consultation with the Utah Division of Oil Gas and Mining (UDOGM) and the authorized officer. The seed mixture(s) shall be planted in the amounts specified in pounds of pure live seed (PLS)/acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed shall be tested and the viability testing of seed shall be done in accordance with State Law(s) and within 9 months prior to purchase. Commercial seed shall be either certified or registered seed. The seed mixture container shall be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed shall be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly planted over the disturbed area. Since smaller or heavier seeds have a tendency to drop to the bottom of the drill and are planted first, the holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre noted below are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of the second growing season after seeding. The authorized officer is to be notified a minimum of ten (10) days prior to seeding of the project.

21. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain Five-State Interagency Committee. The color selected for this site will be determined by the authorized officer in consultation with the holder.

22. The holder is authorized to install a locked gate across the road accessing the Left Fork of Deadman Canyon. The gate shall be constructed to meet BLM Standards. The gate shall be appropriately signed stating that access by foot is authorized and stating where a key may be obtained to open the gate.

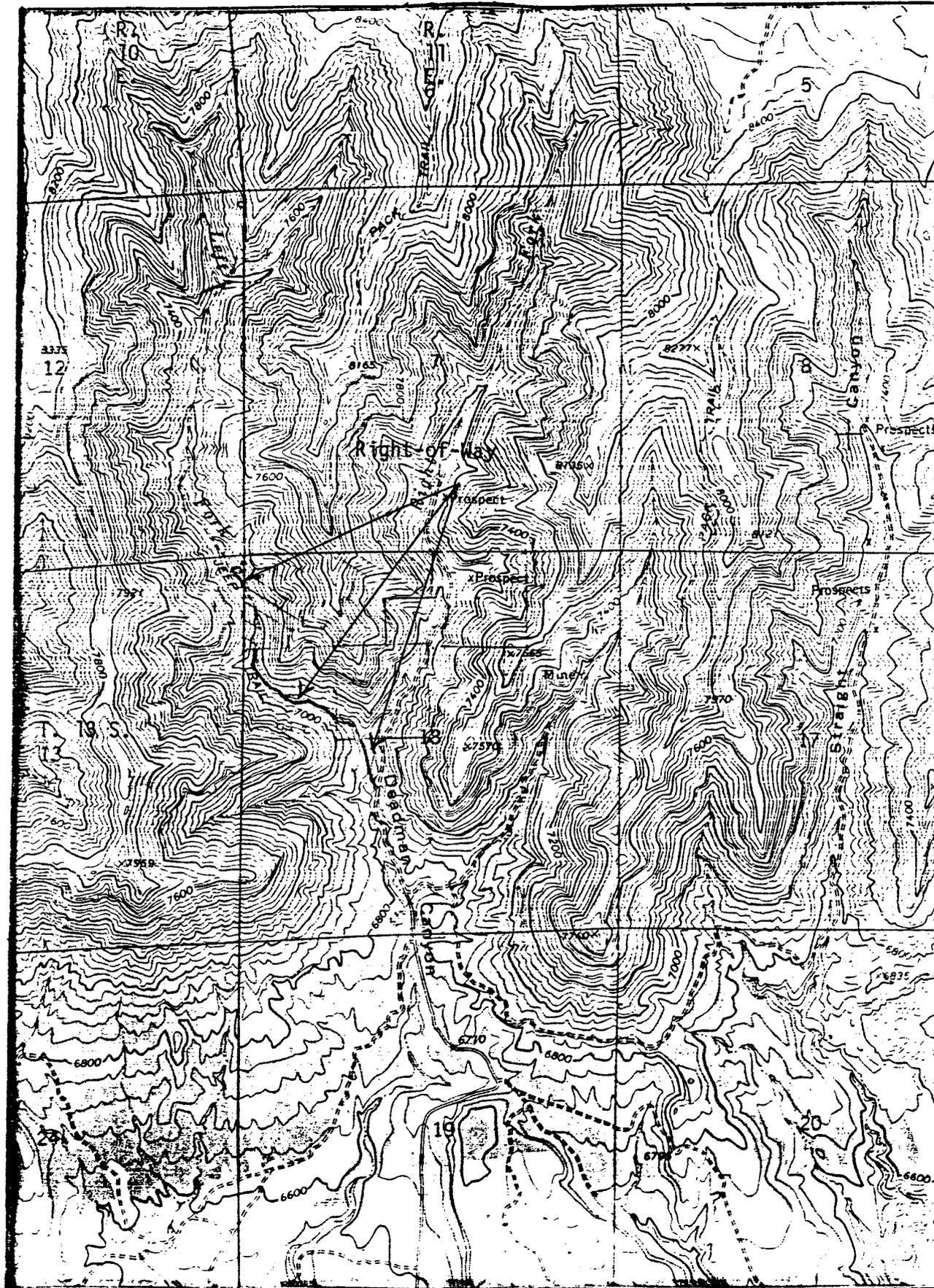
23. Construction sites shall be maintained in a sanitary condition at all times; waste materials at those sites shall be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.

24. Prior to termination of the right-of-way, the holder shall contact the authorized officer to arrange a pretermination conference. This conference will be held to review the termination provisions of the grant.

One (1) year prior to termination of the right-of-way, the holder shall contact the authorized officer to arrange a joint inspection of the right-of-way. This inspection will be held to agree to an acceptable termination (and rehabilitation) plan. This plan shall include, but is not limited to, removal of facilities, drainage structures, or surface material, recontouring, topsoiling, or seeding. The authorized officer must approve the plan in writing prior to the the holder's commencement of any termination activities.

Wang 0238M

Exhibit B



Deadman Canyon 7 1/2 Minute Quadrangle showing right-of-way location.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

2890
UTU-64158
(U-066)

Moab District
Price River Resource Area
900 North 700 East
Price, Utah 84501

Mike Glasson
Andalex Resources Incorporated
P. O. Box 902
Price, Utah 84501

MAR 14 1989

Dear Mr. Glasson:

A meeting and field trip was conducted on January 31, 1989, to develop recommendations for Andalex Resources with regard to proposed development in the left fork of Deadman Canyon and an apparent conflict with a nesting golden eagle. The meeting was attended by Utah Division of Wildlife Resources (UDWR), Utah Division of Oil, Gas and Mining (UDOGM) and U. S. Fish and Wildlife Services (USFWS).

The first part of the meeting served to acquaint representatives of the various agencies with proposed surface facilities in the left fork of Deadman Canyon and their proximity to a golden eagle nest documented active in 1981 and 1988. Two scenarios for development in the left fork were identified. The minimum development scenario was construction of a ventilation fan in the left fork. All other surface facilities required for the Aberdeen Mine in this scenario would be constructed in the right fork. The maximum development proposal was to construct the major facilities needed for the Aberdeen Mine in the left fork, including a main entry, top soil storage, material storage, coal stockpile, fan, power substation, truck loadout, major access road, and sedimentation pond. The meeting concluded at Andalex Resources' office when Lane Adair reported on the company's status with regard to development in the left fork and progress in exploring old mine workings in the right fork.

On the field trip, we visited the proposed facility location in the left fork and viewed its proximity to the golden eagle nest, approximately one-quarter mile away. Site specific issues discussed at the site included viewshed from the nest site (whether proposed facilities would be in direct line-of-sight), ability to move facility locations up or down canyon to avoid the one-half-mile buffer zone, etc. The following comments and recommendations were made on the two development proposals.

Minimum Development Proposal

There was general concurrence that a ventilation fan could be accommodated in the left fork, as shown in Figure 1, with no significant impact to golden eagle nesting activity.

RECEIVED

MAR 14 1989

ANDALEX RESOURCES INC.

Specific recommendations included:

1. The fan would be located out of line-of-sight for the eagle nest. Figure 2 shows the viewshed from the nest and indicates the proposed fan location would be acceptable with minor, if any, modification necessary.
2. Permit only minimal road upgrading for surface access to the fan.
3. The fan be constructed primarily from within the mine, including power, and that construction be completed outside the nesting period, February 1 to July 15.
4. Daily fan maintenance and inspection be conducted from within the mine.

Maximum Development Proposal

There was consensus among the agencies that maximum development as shown in Figure 1 would significantly impact golden eagle nesting activity. Specific recommendations included:

1. Disallow significant development, beyond minor road upgrading and the ventilation fan, within the one-half-mile buffer zone.
2. Maximize opportunities in the right fork for accessing and locating facilities for the Aberdeen Mine. This could include some rock tunneling to accommodate high-profile equipment.
3. Evaluate feasibility of constructing a rock slope to access old workings in the coal seam above the Aberdeen and utilize these workings to access the Aberdeen Mine.

In the event development of the Aberdeen Mine is not technically feasible from the right fork, the following recommendations should be used as guidelines in designing facilities for the left fork. It should be emphasized that such development within the one-half-mile buffer zone may impact the golden eagle nest and would require further coordination with the USF&WS and UDWR.

1. All active facilities (those involving nonstationary equipment operation or human activity) should be placed outside the one-half-mile buffer zone.
2. Passive facilities or structures (top soil storage sedimentation pond, etc.) should be located out of line-of-sight.
3. Vegetation such as quick growing poplars and earthen berms have been utilized to help shield facilities and minimize impacts to wildlife.
4. A covered coal conveyor system could be utilized to transport coal out of the one-half-mile buffer zone or even to surface facilities in the right fork.

One other issue, mule deer winter and/or transitional range was raised with respect to maximum development in the left fork. Any proposals with significant surface disturbance should include measures to mitigate impacts to habitats important for mule deer in the spring and fall transitional periods.

We are hopeful these recommendations will help avoid serious conflicts with development of the Aberdeen Mine and facilitate the issuance of appropriate rights-of-way for Andalex. If there are any questions about these recommendations, please feel free to contact David Mills of my staff at 637-4584.

Sincerely yours,


Area Manager

Enclosures (2):

1-Figure 1

2-Figure 2

cc: UDWR
USFWS
UDOGM

007/019 #2

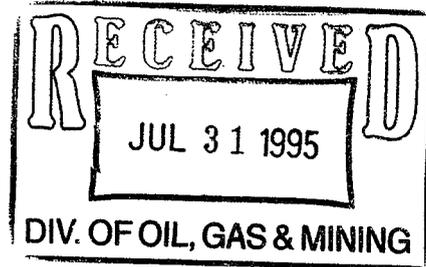


ANDALEX
RESOURCES, INC.
Tower Division

P.O. BOX 902
PRICE, UTAH 84501
PHONE (801) 637-5385
TELECOPIER (801) 637-8860

July 11, 1995

State of Utah
Department of Natural Resources
Division of Oil, Gas, and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203



Attn: Pamela Grubaugh-Littig
Re: ACT 007/019-94G, Conditions 1 and 2

Dear Ms. Littig

I enclose for your review comments received from the surface owners regarding the post mining land use of the access road to the left fork fan installation.

Also enclosed is a complete final set of drawings and text which were submitted over the last twelve months during the approval process.

Please call with any questions.

Sincerely,

Michael W. Glasson

7/31

Daron
Do you
want Paul to
look at this?
(review)...
from

To be included in Appendix J.

Post Mining Road
Left Fork Fan Installation

1. Mrs. Gladys Artman, personal communication on July 20, 1995: her desire was to leave the road status-quo following the cessation of mining activities.

2. Bureau of Land Management, communication with the Price River Resource Area Realty Specialist and Area Manager: the BLM's desire is to close the road following the cessation of mining activities which would include reclamation.

3. Utah School and Institutional Trust Lands Administration: the easement granted to us by the State Lands contemplates the removal of the road.



ANDALEX
RESOURCES, INC.
Tower Division

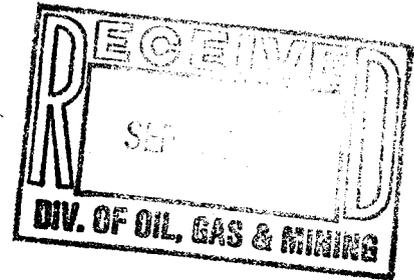
P.O. BOX 902
PRICE, UTAH 84501
PHONE (801) 637-5385
TELECOPIER (801) 637-8860

September 8, 1994

946

Was this filed?

State of Utah
Department of Natural Resources
Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203



Attn: Daron Haddock, Permit Supervisor

Re: ACT 007/019, Incidental Boundary Change, Remote Fan Installation

Dear Mr. Haddock: ^{#2}

Copy for Amendment file

Enclosed are three copies of plans for construction of a pad and remote ventilation fan installation in the left-hand fork of Deadman Canyon.

Included are cross-sections showing cut and fill volumes, as well as size and shape of the pad and location of the topsoil storage area to the north. This cut slope pad will be reclaimed to the original contour upon completion of mining as shown on the cross-section diagrams.

Attached are calculations by a registered professional engineer showing culvert size determinations for the initial drainage crossing, as well as at the fan location.

Soil Resources information for the proposed breakout will be submitted as soon as the report is completed. Topsoil will be removed and stored according to Andalex's approved MRP. This will include segregation and protection by means of earthen berms and revegetation.

State of Utah
Department of Natural Resources
Division of Oil, Gas & Mining
Attn: Daron Haddock, Permit Supervisor
September 8, 1994
Page Two

This area has been addressed in the CHIA performed on our recent UTU-69600 approval (AEP lease). All areas will be protected from runoff (sediment control) using straw dikes on all downstream slopes. The fan pad will drain to a portal.

The existing road will be upgraded only as necessary to access equipment for the construction and installation.

Andalex views this installation on its BLM right-of-way U-64158 as an incidental boundary change and we are anxious to begin construction as soon as possible.

Thank you for your assistance.

Sincerely,



Michael W. Glasson
Senior Geologist

Enclosures

g:\wp51\fin\public\glasson\007-019.fan

APPLICATION FOR PERMIT CHANGE

Title of Change:

Permit Number: ACT / 007 / 019

Mine: Centennial

Permittee: Andalex Resources, Inc.

Aberdeen Mine Fan Installation

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

Longwall mining in the Aberdeen Mine will require an increase in ventilation. It is proposed to accomplish this through the use of an additional fan. Timing is this construction year.

- Yes No 1. Change in the size of the Permit Area? 0.4 acres increase decrease.
- Yes No 2. Change in the size of the Disturbed Area? 0.4 acres increase decrease.
- Yes No 3. Will permit change include operations outside the Cumulative Hydrologic Impact Area?
- Yes No 4. Will permit change include operations in hydrologic basins other than currently approved?
- Yes No 5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes No 6. Does permit change require or include public notice publication?
- Yes No 7. Permit change as a result of a Violation? Violation #
- Yes No 8. Permit change as a result of a Division Order? D.O.#
- Yes No 9. Permit change as a result of other laws or regulations? Explain: MSHA Ventilation Requirements
- Yes No 10. Does permit change require or include ownership, control, right-of-entry, or compliance information?
- Yes No 11. Does the permit change affect the surface landowner or change the post mining land use?
- Yes No 12. Does permit change require or include collection and reporting of any baseline information?
- Yes No 13. Could the permit change have any effect on wildlife or vegetation outside the current disturbed area?
- Yes No 14. Does permit change require or include soil removal, storage or placement?
- Yes No 15. Does permit change require or include vegetation monitoring, removal or revegetation activities?
- Yes No 16. Does permit change require or include construction, modification, or removal of surface facilities?
- Yes No 17. Does permit change require or include water monitoring, sediment or drainage control measures?
- Yes No 18. Does permit change require or include certified designs, maps, or calculations?
- Yes No 19. Does permit change require or include underground design or mine sequence and timing?
- Yes No 20. Does permit change require or include subsidence control or monitoring?
- Yes No 21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan?
- Yes No 22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling?
- Yes No 23. Is this permit change coal exploration activity inside outside of the permit area?

Attach 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.

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.

Michael W. Starn
Signed - Name - Position - Date

Subscribed and sworn to before me this 25 day of July, 19 94

Jana K. O'Hearon
Notary Public

My Commission Expires: July 22, 19 97
Attest: STATE OF Utah
COUNTY OF Carbon



Notary Public
JANA K. O'HEARON
830 North 100 East
Price, Utah 84501
My Commission Expires
July 22, 1997
State of Utah

Received by Oil, Gas & Mining

RECEIVED

DIV. OF OIL, GAS & MINING

ASSIGNED PERMIT CHANGE NUMBER



BLACKHAWK ENGINEERING, CO.

Rt. 1, Box 146-H5 - Helper, Utah 84526 - Telephone (801) 637-2422

To: Mike Glasson
From: Dan Guy
Subject: Culvert Sizing for Left Fork of Deadman Canyon
Date: September 9, 1994

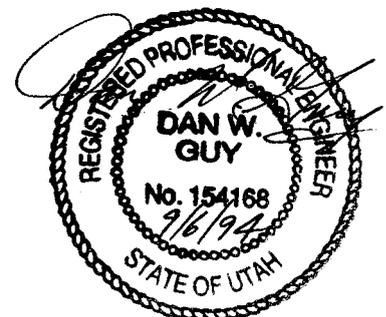
Per your request, I have run out some calculations to size the proposed upper and main canyon culverts for the Left Fork of Deadman Canyon.

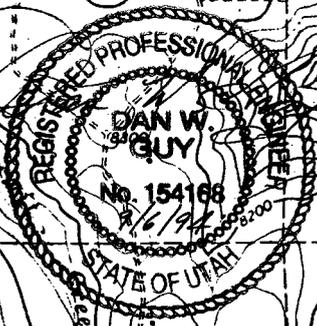
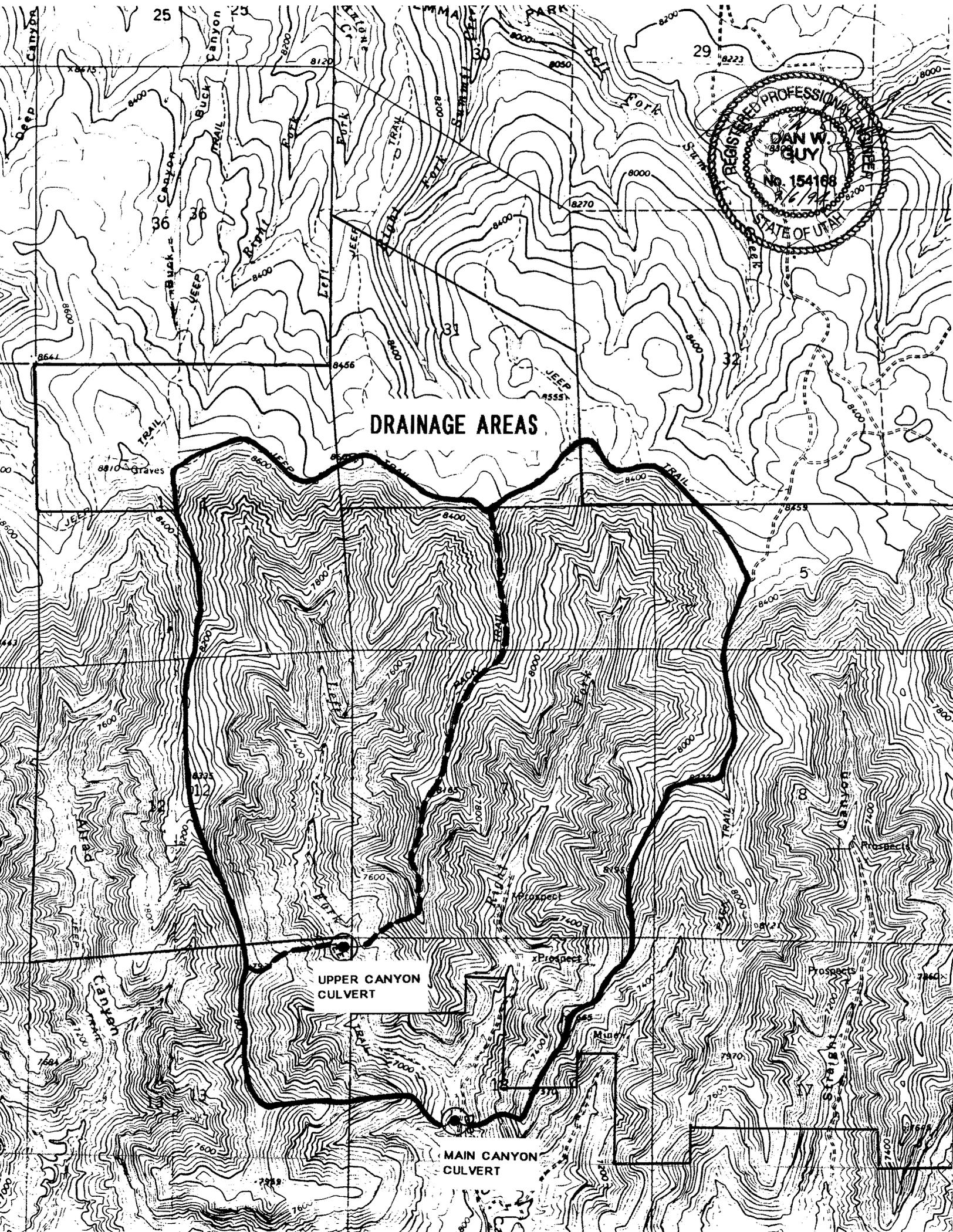
The following parameters were used in the calculations:

<u>Location</u>	<u>Main Canyon Culvert</u>	<u>Upper Canyon Culvert</u>
Area	2075.35 ac.	897.85 ac.
Runoff CN	70	70
Rainfall 10/24	1.82"	1.82"
Rainfall 100/6	1.91"	1.91"
Hydraulic Length	12,000 ft.	8,400 ft.
Slope	20%	20%
Culvert Slope	5%	5%
Flow (10/24)	39.81 cfs	19.89 cfs
Flow (100/6)	73.91 cfs	35.02 cfs
Req'd Diam. (10/24)	2.34 ft.	1.80 ft.
Req'd Diam. (100/6)	2.95 ft.	2.23 ft.
Recommended Diameter	4.00 ft.	3.50 ft.

All calculations were based on methods and formulas described in the permit. It should be noted that the permit does allow the use of a runoff curve number of 65 for undisturbed diversions and culverts; however, the more conservative CN of 70 was used for these calculations for design purposes.

Based on the above, I would recommend a minimum culvert size of 48" diameter for the main canyon and a 42" diameter for the upper canyon (fan pad area). This allows for a full 1' + additional diameter beyond that required by the calculations. These sizes will be more than adequate to carry the calculated runoff from a 100 year-6 hour event or a 10 year-24 hour event.





DRAINAGE AREAS

UPPER CANYON
CULVERT

MAIN CANYON
CULVERT

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: MAIN CANYON CULVERT

Comment: BASED ON CN=70 (10/24)

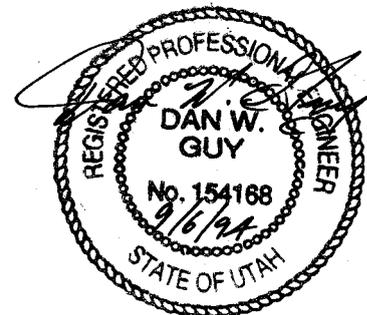
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	39.81 cfs

Computed Results:

Full Flow Diameter.....	2.34 ft
Full Flow Depth.....	2.34 ft
Velocity.....	9.29 fps
Flow Area.....	4.29 sf
Critical Depth....	2.11 ft
Critical Slope....	0.0439 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	39.81 cfs
QMAX @.94D.....	42.82 cfs
Froude Number.....	FULL



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: MAIN CANYON CULVERT

Comment: BASED ON CN=70 (100/6)

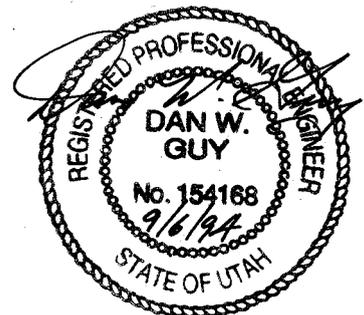
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	73.91 cfs

Computed Results:

Full Flow Diameter.....	2.95 ft
Full Flow Depth.....	2.95 ft
Velocity.....	10.84 fps
Flow Area.....	6.82 sf
Critical Depth....	2.70 ft
Critical Slope....	0.0435 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	73.91 cfs
QMAX @.94D.....	79.51 cfs
Froude Number.....	FULL



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: UPPER CANYON CULVERT

Comment: BASED ON CN=70 (10/24)

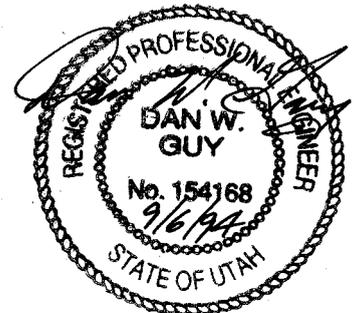
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	19.89 cfs

Computed Results:

Full Flow Diameter.....	1.80 ft
Full Flow Depth.....	1.80 ft
Velocity.....	7.81 fps
Flow Area.....	2.55 sf
Critical Depth....	1.61 ft
Critical Slope....	0.0444 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	19.89 cfs
QMAX @.94D.....	21.40 cfs
Froude Number.....	FULL



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: UPPER CANYON CULVERT

Comment: BASED ON CN=70 (100/6)

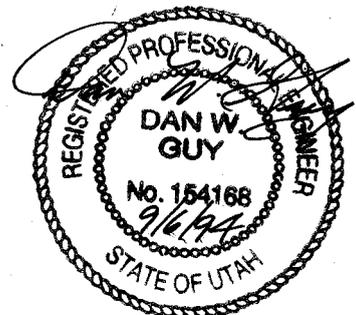
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	35.02 cfs

Computed Results:

Full Flow Diameter.....	2.23 ft
Full Flow Depth.....	2.23 ft
Velocity.....	8.99 fps
Flow Area.....	3.89 sf
Critical Depth....	2.01 ft
Critical Slope....	0.0439 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	35.02 cfs
QMAX @.94D.....	37.67 cfs
Froude Number.....	FULL





United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Moab District
Price River Resource Area
900 North 700 East
Price, Utah 84501

2890
UTU-64158
(U-066)

CERTIFIED MAIL--RETURN RECEIPT REQUESTED
Certification No. 060 435 539

JAN 5 1990

NOTICE

Andalex Resources Incorporated : Right-of-Way Application
P. O. Box 902 : UTU-64158
Price, Utah 84501 :

Right-of-Way Grant Offered; Stipulations Required Advance Rental Required

On December 6, 1988, Andalex Resources Incorporated filed right-of-way application UTU-64158 for a mine site facility, on public lands in Carbon County, Utah.

The Bureau of Land Management proposes to issue the enclosed grant for the right-of-way referenced above. If you are in agreement with the proposed terms, conditions, and stipulations, please execute and return two copies of the enclosed grant. This grant, along with the authority to use the lands described in the document, becomes effective on the date it is signed by the BLM authorized officer. A copy of the right-of-way grant will be returned to you when signed.

Section 4a of the enclosed right-of-way grant incorporates by reference all of the regulations contained in Chapter 43 of the Code of Federal Regulations (CFR) part 2800. These regulatory provisions are mandatory and apply whether or not they are specifically mentioned in the grant. You should be familiar with 43 CFR 2800 before executing the grant.

Regulations at 43 CFR 2803.1-2 require the right-of-way holder to pay fair market value rental as determined by the authorized officer.

Pending formal appraisal, the advance rental deposit is \$25.00.

The regulations at 43 CFR 2808.4 require the holder of a right-of-way to reimburse the United States for costs incurred in monitoring the construction, operation, maintenance, and termination of the authorized facilities on the right-of-way, and the protection and rehabilitation of the lands involved. The monitoring fee of \$100.00 has been paid.

You are allowed thirty (30) days from receipt of this notice to sign and return both copies of the grant and required payment(s) (please make check payable to the Department of the Interior - BLM) or the application shall be rejected in its entirety.

If you have any questions, please feel free to contact Mark Mackiewicz of my staff at (801) 637-4584.


Area Manager
Acting

Enclosure:
Proposed Grant (in duplicate)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RIGHT-OF-WAY GRANT/TEMPORARY USE PERMIT

Issuing Office

Moab District, Price River R.A.

Serial Number

UTU-64158

1. A (right-of-way) (permit) is hereby granted pursuant to:

- a. Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761);
- b. Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185);
- c. Other (describe) _____

2. Nature of Interest:

- a. By this instrument, the holder Andalex Resources Incorporated receives a right to construct, operate, maintain, and terminate a n access road, two portals, pad site, & two coal tunnels on public lands (or Federal land for MLA Rights-of-Way) described as follows:

Salt Lake Meridian, Utah
T. 13 S., R. 10 E., Sec. 13, Lot 1.
T. 13 S., R. 11 E., Sec. 18, Lot 2, NE4SW4.

- b. The right-of-way granted herein for an access road is 16 feet in width, 3000 feet in length encompassing 1.00 acres more or less, pad site is 70 feet in width and 250 feet in length encompassing 0.40 acres more or less, and two coal tunnels approximately 70 feet in length, 20 feet in width and 7 feet in height, and one 30 feet in length, 20 feet in width and 7 feet in height encompassing 0.05 acres more or less.

- b. The right-of-way or permit area granted herein is _____ feet wide, _____ feet long and contains _____ acres, more or less. If a site type facility, the facility contains _____ acres.
- c. This instrument shall terminate on January 10, 2020, thirty (30) years from its effective date unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.
- d. This instrument may may not be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.
- e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.

3. Rental:

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions:

- a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations parts 2800 and 2880.
- b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands within --- days, or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.
- c. Each grant issued pursuant to the authority of paragraph (1)(a) for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.
- d. The stipulations, plans, maps, or designs set forth in Exhibit(s) A & B, dated JAN 5 1990, attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.
- e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.
- f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.

IN WITNESS WHEREOF, The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

Samuel C. Quigley
(Signature of Holder)

[Signature]
(Signature of Authorized Officer)

General Manager
(Title)

Acting Area Manager
(Title)

1-9-90
(Date)

January 11, 1990
(Effective Date of Grant)

Exhibit A
Stipulations

JAN 25 1990

1. The holder shall comply with applicable Federal and State laws and regulations issues thereunder, existing or hereafter enacted or promulgated, affecting in any manner construction, operation, maintenance or termination of facilities located on the right-of-way to include all applicable regulations in 30 CFR Chapter VII and regulations developed to implement the Coal Mining Reclamation Act of 1978 (U.C.A. 40-10-1 et.seq.) Chapter I Parts U.M.C. 700-845.
2. The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the Andalex Resources Mining and Reclamation Plan (approved 1/4/82) (renewed 3/2/87) and the "Aberdeen Mine Revision" to the approved mine plan (ACT/007/019). Any relocation, additional construction, or use that is not in accord with the approved plan(s), shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way grant, including all stipulations and approved plan(s) of development, shall be made available on the right-of-way area during construction, operation, and termination. Noncompliance with the above will be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.
3. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2803.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from fire or soil movement (including landslides and slumps, as well as wind and water-caused movement of particles) caused or substantially aggravated by any of the following within the right-of-way or permit area.
4. The holder shall insure that the bond securing coal lease SL-027304 is modified to include the underground portion of right-of-way UTU-64158, prior to moving onto the right-of-way area. Written documentation noting this change shall be presented to the authorized officer.
5. The holder shall follow all provisions of its revised Resource Recovery and Protection Plan (R₂P₂) covering coal lease SL-027304 in removal of coal from the right-of-way.
6. The holder shall pay fair market value for the coal removed in the construction of the tunnels. Fair market value is determined to be the difference between the actual mining costs and the selling price of the coal at the mine by not less than eight (8) percent of the value of the coal at the mine. Mining cost will include only the actual extractive costs at the mine and will not include capital investments relating to permanent mine development or offsite administrative costs. Coal tonnage removed will be determined by volumetric calculation or actual mine weights provided by the holder. The holder shall provide information as to the contracted price of coal sold and estimated per ton mining cost. Payment of all coal shall be made within thirty (30) days after billing by the authorized officer.

7. The holder shall contact the authorized officer at least fourteen (14) days prior to the anticipated start of construction and/or any surface disturbing activities. The authorized officer may require and schedule a preconstruction conference with the holder prior to the holder's commencing construction and/or surface disturbing activities on the right-of-way. The holder and/or his representative shall attend this conference. The holder's contractor, or agents involved with construction and/or any surface disturbing activities associated with the right-of-way, shall also attend this conference to review the stipulations of the grant including the plan(s) of development.

8. The holder shall not initiate any construction or other surface disturbing activities on the right-of-way without the prior written authorization of the authorized officer. Such authorization shall be a written notice to proceed issued by the authorized officer. Any notice to proceed shall authorize construction or use only as therein expressly stated and only for the particular location or use therein described.

9. The authorized officer may suspend or terminate in whole, or part, any notice to proceed which has been issued when, in his judgment, unforeseen conditions arise which result in the approved terms and conditions being inadequate to protect the public health and safety or to protect the environment.

10. The holder shall designate a representative(s) who shall have the authority to act upon and to implement instructions from the authorized officer. The holder's representative shall be available for communication with the authorized officer within a reasonable time when construction or other surface disturbing activities are underway.

11. The holder shall conduct all activities associated with construction, operation, and termination of the right-of-way within the authorized limits of the right-of-way.

12. The holder shall complete a cultural and historic clearance of the right-of-way prior to initiation of construction. All persons in the area who are associated with the project will be informed by the holder that they will be subject to prosecution for disturbing archaeological sites or collecting artifacts. If subsurface cultural material is exposed during construction, work at that spot will stop immediately and the BLM, Price River Resource Area Office will be contacted (phone (801) 637-4584). The holder will be responsible for the cost of evaluation of the discovery and proper mitigation measures. Any decision as to proper mitigation shall be made by the authorized officer after consulting with the holder.

13. Prior to construction an inventory of the project area will be conducted by the authorized officer to determine the presence of the plant Hedysarum occidentale var. canone. A Notice to Proceed will not be issued until this clearance has been made and a satisfactory mitigation plan developed if necessary.

14. The holder shall not conduct construction activities within 0.5 miles or a designated buffer zone from active raptor nest sites during the nesting period, February 15 to July 15. Buffer zones and or adjustments to the nesting period will be determined by the authorized officer in consultation with the United States Fish and Wildlife Service (USFWS) and the Utah Division of Wildlife Resources (UDWR).

15. The holder shall ensure that no new access road construction is within line-of-sight of the raptor nests identified within 0.5 miles of the proposed road. Prior to road construction the authorized officer shall be afforded the opportunity to inspect the flagged access road.

16. The holder shall conduct all routine maintenance work on the access road except required snow removal, during the period of July 1 to December 1 to minimize impacts to raptors, mule deer and elk.

17. The holder shall restrict construction of all above ground facilities authorized under this right-of-way during the period of December 1 through April 15 to minimize impacts to wintering deer and elk.

18. The holder shall furnish and install culverts of the gauge, materials, diameter(s), and length(s) indicated and approved by the authorized officer. Culverts shall be free of corrosion, dents, or other deleterious conditions. Culverts shall be placed on channel bottoms on firm, uniform beds which have been shaped to accept them and aligned to minimize erosion. Backfill shall be thoroughly compacted. No equipment shall be routed over a culvert until backfill depth is adequate to protect the culverts.

19. The holder shall maintain the right-of-way in a safe, usable condition, as directed by the authorized officer. (A regular maintenance program shall include, but is not limited to, blading, ditching, culvert installation, and surfacing).

20. The holder shall seed all disturbed areas with the seed mixture(s) to be developed in consultation with the Utah Division of Oil Gas and Mining (UDOGM) and the authorized officer. The seed mixture(s) shall be planted in the amounts specified in pounds of pure live seed (PLS)/acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed shall be tested and the viability testing of seed shall be done in accordance with State Law(s) and within 9 months prior to purchase. Commercial seed shall be either certified or registered seed. The seed mixture container shall be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed shall be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly planted over the disturbed area. Since smaller or heavier seeds have a tendency to drop to the bottom of the drill and are planted first, the holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre noted below are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of the second growing season after seeding. The authorized officer is to be notified a minimum of ten (10) days prior to seeding of the project.

21. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain Five-State Interagency Committee. The color selected for this site will be determined by the authorized officer in consultation with the holder.

22. The holder is authorized to install a locked gate across the road accessing the Left Fork of Deadman Canyon. The gate shall be constructed to meet BLM Standards. The gate shall be appropriately signed stating that access by foot is authorized and stating where a key may be obtained to open the gate.

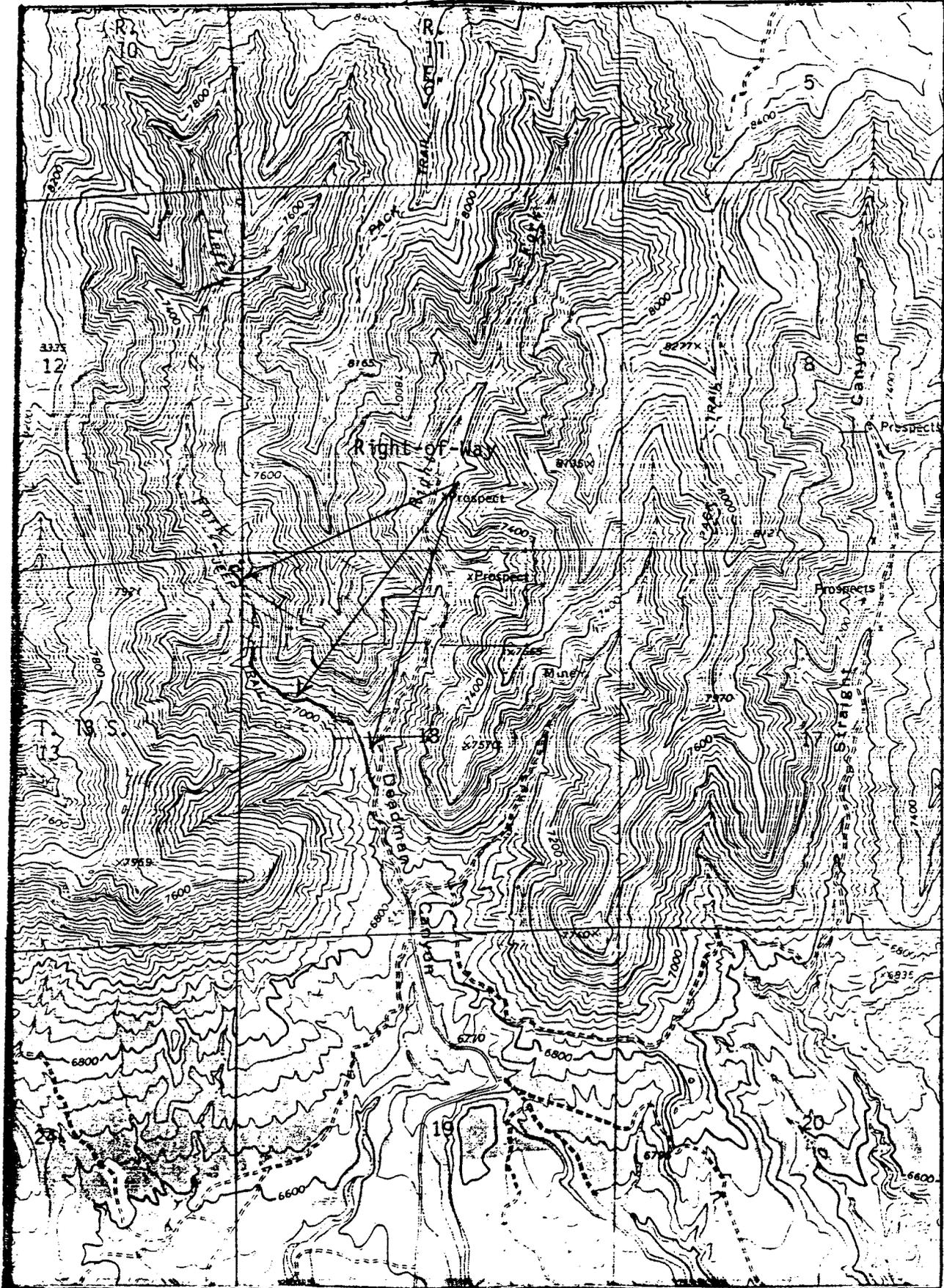
23. Construction sites shall be maintained in a sanitary condition at all times; waste materials at those sites shall be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.

24. Prior to termination of the right-of-way, the holder shall contact the authorized officer to arrange a pretermination conference. This conference will be held to review the termination provisions of the grant.

One (1) year prior to termination of the right-of-way, the holder shall contact the authorized officer to arrange a joint inspection of the right-of-way. This inspection will be held to agree to an acceptable termination (and rehabilitation) plan. This plan shall include, but is not limited to, removal of facilities, drainage structures, or surface material, recontouring, topsoiling, or seeding. The authorized officer must approve the plan in writing prior to the the holder's commencement of any termination activities.

Wang 0238M

Exhibit B



Deadman Canyon 7 1/2 Minute Quadrangle showing right-of-way location.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

2890
UTU-64158
(U-066)

Moab District
Price River Resource Area
900 North 700 East
Price, Utah 84501

Mike Glasson
Andalex Resources Incorporated
P. O. Box 902
Price, Utah 84501

MAR 14 1989

Dear Mr. Glasson:

A meeting and field trip was conducted on January 31, 1989, to develop recommendations for Andalex Resources with regard to proposed development in the left fork of Deadman Canyon and an apparent conflict with a nesting golden eagle. The meeting was attended by Utah Division of Wildlife Resources (UDWR), Utah Division of Oil, Gas and Mining (UDOGM) and U. S. Fish and Wildlife Services (USFWS).

The first part of the meeting served to acquaint representatives of the various agencies with proposed surface facilities in the left fork of Deadman Canyon and their proximity to a golden eagle nest documented active in 1981 and 1988. Two scenarios for development in the left fork were identified. The minimum development scenario was construction of a ventilation fan in the left fork. All other surface facilities required for the Aberdeen Mine in this scenario would be constructed in the right fork. The maximum development proposal was to construct the major facilities needed for the Aberdeen Mine in the left fork, including a main entry, top soil storage, material storage, coal stockpile, fan, power substation, truck loadout, major access road, and sedimentation pond. The meeting concluded at Andalex Resources' office when Lane Adair reported on the company's status with regard to development in the left fork and progress in exploring old mine workings in the right fork.

On the field trip, we visited the proposed facility location in the left fork and viewed its proximity to the golden eagle nest, approximately one-quarter mile away. Site specific issues discussed at the site included viewshed from the nest site (whether proposed facilities would be in direct line-of-sight), ability to move facility locations up or down canyon to avoid the one-half-mile buffer zone, etc. The following comments and recommendations were made on the two development proposals.

Minimum Development Proposal

There was general concurrence that a ventilation fan could be accommodated in the left fork, as shown in Figure 1, with no significant impact to golden eagle nesting activity.

RECEIVED

MAR 14 1989

ANDALEX RESOURCES INC.

Specific recommendations included:

1. The fan would be located out of line-of-sight for the eagle nest. Figure 2 shows the viewshed from the nest and indicates the proposed fan location would be acceptable with minor, if any, modification necessary.
2. Permit only minimal road upgrading for surface access to the fan.
3. The fan be constructed primarily from within the mine, including power, and that construction be completed outside the nesting period, February 1 to July 15.
4. Daily fan maintenance and inspection be conducted from within the mine.

Maximum Development Proposal

There was consensus among the agencies that maximum development as shown in Figure 1 would significantly impact golden eagle nesting activity. Specific recommendations included:

1. Disallow significant development, beyond minor road upgrading and the ventilation fan, within the one-half-mile buffer zone.
2. Maximize opportunities in the right fork for accessing and locating facilities for the Aberdeen Mine. This could include some rock tunneling to accommodate high-profile equipment.
3. Evaluate feasibility of constructing a rock slope to access old workings in the coal seam above the Aberdeen and utilize these workings to access the Aberdeen Mine.

In the event development of the Aberdeen Mine is not technically feasible from the right fork, the following recommendations should be used as guidelines in designing facilities for the left fork. It should be emphasized that such development within the one-half-mile buffer zone may impact the golden eagle nest and would require further coordination with the USF&WS and UDWR.

1. All active facilities (those involving nonstationary equipment operation or human activity) should be placed outside the one-half-mile buffer zone.
2. Passive facilities or structures (top soil storage sedimentation pond, etc.) should be located out of line-of-sight.
3. Vegetation such as quick growing poplars and earthen berms have been utilized to help shield facilities and minimize impacts to wildlife.
4. A covered coal conveyor system could be utilized to transport coal out of the one-half-mile buffer zone or even to surface facilities in the right fork.

One other issue, mule deer winter and/or transitional range was raised with respect to maximum development in the left fork. Any proposals with significant surface disturbance should include measures to mitigate impacts to habitats important for mule deer in the spring and fall transitional periods.

We are hopeful these recommendations will help avoid serious conflicts with development of the Aberdeen Mine and facilitate the issuance of appropriate rights-of-way for Andalex. If there are any questions about these recommendations, please feel free to contact David Mills of my staff at 637-4584.

Sincerely yours,


Area Manager

Enclosures (2):

1-Figure 1
2-Figure 2

cc: UDWR
USFWS
UDOGM



ANDALEX
RESOURCES, INC.
 Tower Division

P.O. BOX 902
 PRICE, UTAH 84501
 PHONE (801) 637-5385
 TELECOPIER (801) 637-8860

November 9, 1994

State of Utah
 Department of Natural Resources
 Division of Oil, Gas & Mining
 355 West North Temple
 3 Triad Center, Suite 350
 Salt Lake City, Utah 84180-1203

Handwritten notes:
 [Signature]
 In Henry's review

Attn: Henry Sauer, Senior Soils Biologist
 Re: ACT 007/019 Left Fork Fan Installation

Dear Mr. Sauer: #2

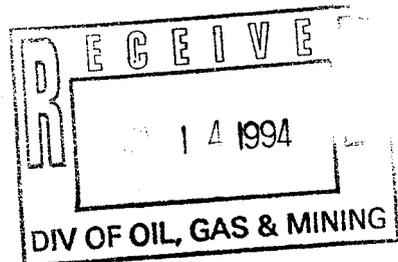
In addition to our submittal on October 21, 1994, I have added the reference to topsoil salvaging according to EarthFax on Page 37. This page had previously been submitted and had referenced the addition of EarthFax's soil resources report to Appendix M.

Thank you.

Sincerely,
Michael W. Glasson
 Michael W. Glasson
 Senior Geologist

g:\wp51\fin\public\gleason\007-019.fan

Baron,
 Looks good. I need to make sure that the revised pages from Earthfax's Soil Survey have been inserted into the survey. Do you have a copy of the survey?
 Thanks
 Henry



R645-301-210.

INTRODUCTION

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 as planimetered by Andalex staff is 32.34 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 32.34 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 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, Plates 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 in Chapter IV Revised 10/21/94, 11/09/94

R645-301-210.

INTRODUCTION

R645-301-211.

PREMINING SOIL RESOURCES

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R645-301-212.

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The topsoil storage areas 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, Plates 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 in Chapter IV Revised 10/21/94, 11/09/94

R645-301-210.

INTRODUCTION

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 as planimetered by Andalex staff is 32.34 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

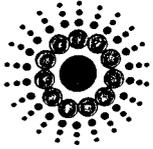
The area from which topsoil has been removed is 32.34 acres and includes poorly developed soils. Using dozers and front end loaders, the soil was scraped from the surface and dumped at a site near the facility location. The topsoil was removed as a separate operation from areas to be disturbed by surface 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 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.

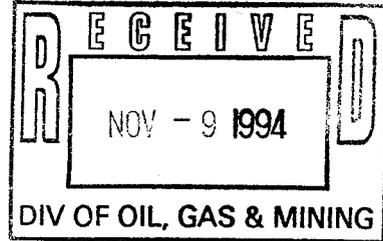
Surveys conducted on the topsoil piles which were drawn into plans and profiles are now included in the plan in Volume II, Plates 37 and 36. This shows volumes stored currently.

The completed disturbance which reports to sedimentation Pond E is 9.96 acres. Please review the top soil summaries in Chapter IV Revised 10/21/94, 11/09/94



ANDALEX
RESOURCES, INC.
 Tower Division

P.O. BOX 902
 PRICE, UTAH 84501
 PHONE (801) 637-5385
 TELECOPIER (801) 637-8860



November 3, 1994

Post-it™ routing request pad 7664

ROUTING - REQUEST

State of Utah
 Department of
 Division of
 355 West North
 3 Triad Center
 Salt Lake City

Attn: He

Re: ACT, 00

Dear Mr. *Henry* *Saw*

Enclosed are
 the ultimate reclamation
 will used in fill:

We expect to
 Thank you.

Please

- READ
- HANDLE
- APPROVE
- and
- FORWARD
- RETURN
- KEEP OR DISCARD
- RE

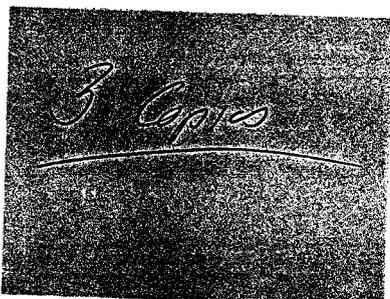
Date _____

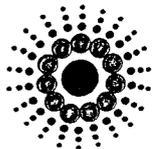
To Henry
This is Andalex's
response to condition
1 of the Topsoil
relocation plan
 Please Review 94C

Darrow,

*Mike will formally
 submit maps and
 analyses regarding
 use of boney material
 as fill.
 Thanks
 Hawes*

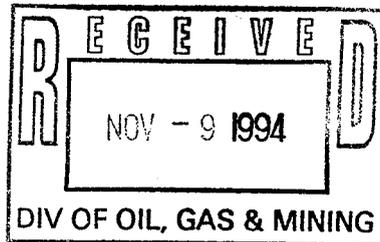
which describe
 use material which
 Wildcat expansion.
 week of November.





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RESOURCES, INC.
Tower Division

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November 3, 1994

State of Utah
Department of Natural Resources
Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Attn: Henry Sauer, Senior Soils Biologist

Re: ACT 007/033 - Refuse/Fill for Expansion

Dear Mr. *Henry* Sauer:

Enclosed are the pages from our Wildcat text which describe the ultimate reclamation commitment for the refuse material which will be used in fill situations during the approved Wildcat expansion.

We expect to mobilize and begin the second week of November. Thank you.

Sincerely,

Michael W. Glasson
Senior Geologist



inspections will be maintained at the site and should any potential hazards be observed, the Division shall be notified and remedial action taken. The coal processing waste piles shall be spread in layers no more than 24 inches in thickness; however, because of the nature of this "boney" material and its size (5 to 8 inches in diameter) compaction is not possible. Observations will be made regarding stability of the pile. This section shall comply with UMC 817.81-.88. Andalex Resources' coal processing waste is very small in volume. Andalex's hydrologic studies have indicated that groundwater does not exist within a zone of impact created by this facility. Drainage from coal processing waste, until such time as the material is buried with four feet of the best available non-toxic and non-combustible material and revegetation has occurred, will report to sedimentation ponds as shown on the surface drainage map. Drainage from the pile is carried to Pond F via disturbed ditch D-17, which is sized to carry runoff from the pile from a 100 year - 6 hour event as required. (See Table IV-13). Slope protection will be provided as required and banks will have a minimum static safety factor of 1.5. In the unlikely event spontaneous combustion occurs within the coal processing waste pile, the fire will be extinguished through means of compaction which is standard operating procedure (not to imply that the waste pile will be compacted as it is built). All personnel at Wildcat Loadout are familiar with this procedure. No burned coal processing waste or coal refuse will be removed from the disposal area except if it is moved to another approved coal processing disposal area. Coal processing waste from the Wildcat Loadout will not be returned to underground mine workings.

This material has been tested according to requirements for acid and toxic-forming materials and the results of these tests have been submitted to the Division. The intention of the testing was to determine whether the material had any toxic or acid-forming characteristics. Our results show that this

Revised 11/07/94

material may be used in fill situations within our approved permit area. It is Andalex's intention to use this material as substitute fill for the expansion plans at the Wildcat loadout. It is clear that this material will have to be reclaimed as a separate operation from an ordinary fill situation. Andalex has committed to covering this material with four feet of native fill prior to redistribution of topsoil. This refuse material, which is used in a fill situation, will be reclaimed separately and covered with native material. Andalex makes this commitment for all of the refuse material which is used as fill.

1.2 Coal Refuse

Please refer to Section 1.1 re Coal Processing Waste. Also please note, Andalex will not use any coal refuse or coal processing waste in the construction of dams or embankments.

Revised 11/07/94

APPLICATION FOR PERMIT CHANGE

Title of Change:

Permit Number: ACT / 007 / 019

Mine: Centennial

Aberdeen Mine Fan Installation

Permittee: Andalex Resources, Inc.

Description, include reason for change and timing required to implement: Longwall mining in the Aberdeen Mine will require an increase in ventilation. It is proposed to accomplish this through the use of an additional fan. Timing is this construction year.

- Yes No 1. Change in the size of the Permit Area? 0.4 acres increase decrease.
- Yes No 2. Change in the size of the Disturbed Area? 0.4 acres increase decrease.
- Yes No 3. Will permit change include operations outside the Cumulative Hydrologic Impact Area?
- Yes No 4. Will permit change include operations in hydrologic basins other than currently approved?
- Yes No 5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes No 6. Does permit change require or include public notice publication?
- Yes No 7. Permit change as a result of a Violation? Violation #
- Yes No 8. Permit change as a result of a Division Order? D.O.#
- Yes No 9. Permit change as a result of other laws or regulations? Explain: MSHA Ventilation Requirements
- Yes No 10. Does permit change require or include ownership, control, right-of-entry, or compliance information?
- Yes No 11. Does the permit change affect the surface landowner or change the post mining land use?
- Yes No 12. Does permit change require or include collection and reporting of any baseline information?
- Yes No 13. Could the permit change have any effect on wildlife or vegetation outside the current disturbed area?
- Yes No 14. Does permit change require or include soil removal, storage or placement?
- Yes No 15. Does permit change require or include vegetation monitoring, removal or revegetation activities?
- Yes No 16. Does permit change require or include construction, modification, or removal of surface facilities?
- Yes No 17. Does permit change require or include water monitoring, sediment or drainage control measures?
- Yes No 18. Does permit change require or include certified designs, maps, or calculations?
- Yes No 19. Does permit change require or include underground design or mine sequence and timing?
- Yes No 20. Does permit change require or include subsidence control or monitoring?
- Yes No 21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan?
- Yes No 22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling?
- Yes No 23. Is this permit change coal exploration activity inside outside of the permit area?

Attach 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.

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.

Michael W. O'Hara
Signed - Name - Position - Date

Subscribed and sworn to before me this 25th day of July, 19 94
Jana K. O'Hearon
Notary Public
My Commission Expires: July 22, 19 97
STATE OF Utah
COUNTY OF Carbon



Notary Public
JANA K. O'HEARON
830 North 100 East
Price, Utah 84501
My Commission Expires
July 22, 1997
State of Utah

Received by Oil, Gas & Mining

RECEIVED

DIV. OF OIL, GAS & MINING

ASSIGNED PERMIT CHANGE NUMBER

PERMIT CHANGE TRACKING FORM

DATE RECEIVED	9/12/94	PERMIT NUMBER	ACT/007/019
Title of Proposal:	Ibc, Remote	PERMIT CHANGE #	946
Description:	Fur Installation	PERMITTEE	Indalex
		MINE NAME	Centennial

	DATE DUE	DATE DONE	RESULT
<input type="checkbox"/> 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION			<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED
<input type="checkbox"/> Notice of Review Status of proposed permit change sent to the Permittee.			Permit Change Classification
<input type="checkbox"/> Request additional review copies prior to Division/Other Agency review.			<input type="checkbox"/> Significant Permit Revision
<input type="checkbox"/> Notice of Approval of Publication. (If change is a Significant Revision.)			<input type="checkbox"/> Permit Amendment
<input type="checkbox"/> Notice of request to modify proposed permit change prior to approval.			<input type="checkbox"/> Incidental Boundary Change

REVIEW TRACKING	INITIAL REVIEW		MODIFIED REVIEW		FINAL REVIEW AND FINDINGS	
DOGM REVIEWER	DUE	DONE	DUE	DONE	DUE	DONE
<input checked="" type="checkbox"/> Administrative Paul	10/14		11/18			
<input checked="" type="checkbox"/> Biology Paul	10/14		11/18			
<input checked="" type="checkbox"/> Engineering Wayne	10/14		11/18			
<input type="checkbox"/> Geology						
<input checked="" type="checkbox"/> Soils Henry	10/14		11/18			
<input checked="" type="checkbox"/> Hydrology Steve	10/14		11/18			
<input checked="" type="checkbox"/> Bonding Wayne	10/14		11/18			
<input type="checkbox"/> AVS Check						

COORDINATED REVIEWS	DUE	DONE	DUE	DONE	DUE	DONE
<input type="checkbox"/> OSMRE						
<input type="checkbox"/> US Forest Service						
<input type="checkbox"/> Bureau of Land Management						
<input type="checkbox"/> US Fish and Wildlife Service						
<input type="checkbox"/> US National Parks Service						
<input type="checkbox"/> UT Environmental Quality						
<input type="checkbox"/> UT Water Resources						
<input type="checkbox"/> UT Water Rights						
<input type="checkbox"/> UT Wildlife Resources						
<input type="checkbox"/> UT State History						
<input type="checkbox"/> Other						

<input type="checkbox"/> Public Notice/Comment/Hearing Complete (If the permit change is a Significant Revision)	<input type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date. <input type="checkbox"/> Permit Change Denied.
<input type="checkbox"/> Copies of permit change marked and ready for MRP.	<input type="checkbox"/> Notice of <input type="checkbox"/> Approval <input type="checkbox"/> Denial to Permittee.
<input type="checkbox"/> Special Conditions/Stipulations written for approval.	<input type="checkbox"/> Copy of Approved Permit Change to File.
<input type="checkbox"/> TA and CHIA modified as required.	<input type="checkbox"/> Copy of Approved Permit Change to Permittee.
<input type="checkbox"/> Permit Change Approval Form ready for approval.	<input type="checkbox"/> Copies to Other Agencies and Price Field Office.

Pinnacle and Aberdeen Mines. With the longwall expansion in the Aberdeen Mine a new fan installation will be required in the left hand fork of Deadman Canyon. (See Left Fork drawings.) Access to and handling and extraction of all coal will be through existing Pinnacle, Aberdeen, and Apex Mine facilities.

Overview and Summary of Project

Mining operations at the Pinnacle Mine began 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 late in 1982. Current mining activity is occurring in the Gilson Seam and Lower Sunnyside Seam. Mining commenced in the Aberdeen Seam in mid 1988. Mining commenced in the Centennial Seam in 1990. The coal is classified as High Volatile B bituminous in the Lower Sunnyside, Gilson and Centennial Seams and as High-volatile A bituminous in the Aberdeen Seam.

The proposed mine plan area is located approximately 10 miles north-northeast of Price, Utah in Carbon County in T13S and R11E (See Figure I-1 and Plate 1). With the addition of the Sunedco Lease the Graves Lease, and the AEP lease, the coal property contains approximately 5,063 acres. Two hundred acres are fee surface and coal leased from the Zion Security Corporation. Two hundred forty acres are fee surface and coal and are leased from the Sunedco Coal Company. The remaining 4,623 acres are federal leases consisting of SL-027304 (236 acres), SL-063058 (400 acres), U-010581 (1,842 acres), U-05067320 (acres), U-52341(120 acres), UTU-66060 (903 acres), and UTU-69600 (802 acres), and which includes lease modifications acquired in 1981. Please see Plate 4.

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 and culinary usage is supplied by wells that have been drilled.

Revised 10/21/94

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

Sec. 9: SE 1/4 NW 1/4

S 1/2 NE 1/4

NE 1/4 NE 1/4

N 1/2 SE 1/4 containing 240 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.

UTU-69600

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

Sec 1, SW $\frac{1}{4}$

Sec 12, lots 2-11, W $\frac{1}{2}$ W $\frac{1}{2}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$

As to all coal in the Centennial Seam only
801.48 acres.

The name and address of the lessor is American Electric Power Service Corporation, Fuel Supply Department, P.O. Box 700, Lancaster, OH 43130

This agreement was executed May 1, 1992.

BLM Right-of-Way U-62045

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

Sec. 18: SE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ containing 10 acres,
more or less.

BLM Right-of-Way UTU-64158 (Left Fork Fan)

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, NE $\frac{1}{4}$ SW $\frac{1}{4}$ (portions of) containing 1.45
acres, more or less.

The lessor is the Department of the Interior, Bureau of Land Management, 324 South State Street, Salt Lake City, Utah 84111.

Private Land Easement

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

Sec. 18: A portion of NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ containing
1.5 acres, more or less.

Revised 10/21/94

R645-301-210.

INTRODUCTION

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 as planimetered by Andalex staff is 32.34 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 32.34 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.

Storage

The topsoil storage areas 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, Plates 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 in Chapter IV

Revised 10/21/94

R645-301-230.

OPERATION PLAN

Topsoil Handling During Operations

Removal

The area from which topsoil has been removed is 32.34 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. Approximately 750 cubic yards of topsoil will be stored in the left hand fork of Deadman Canyon for use during reclamation of the left fork fan installation. (See Plate LF-1.)

Storage

The topsoil storage areas 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, Plates 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 in Chapter IV which show totals and deficiencies. Also see Section F in Chapter IV for information pertaining to top soil substitute.

The new substitute topsoil pile plan and profile along with the volumes is included in Volume II also.

The new substitute topsoil will be protected by the use of straw dikes and earthen berms.

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.

Revised 10/21/94

Vegetation Information

Introduction

Mountain-Brush, Desert Shrub, Pinion-Juniper Woodland, Sagebrush-Grass, Conifer-Aspen, and minor stream-side vegetative types cover the total mine plan area. Most of the area is covered by the Mountain-Brush type while the Pinion-Juniper Woodland type is predominant in the mine mouth area as well as the access routes and utility corridors; this area has been reseeded with a mixture as recommended by the U.S.D.A. S.C.S. (please see Soil Survey and Vegetation Inventory in Appendix M). Appendix M now also includes soils and vegetation information pertaining to the newly acquired AEP Lease. Because there will be no additional surface disturbance on the lease area, a First Order Survey is not deemed necessary.

Andalex has selected and marked three reference areas in the field for vegetation. The Division has reviewed and approved these reference areas. Areas chosen include all types of vegetation conditions such as drainage areas, shallow slopes and steep slopes. Andalex contacted the SCS to help evaluate the condition of these sites. Please see SCS letter in Appendix M. It should be noted that Andalex does have the benefit of a revegetation test plot located on one of the topsoil piles. The drainage area reference area is the most adaptable to the left fork fan installation.

The revegetation map now shows the acreages for the three range types. Shrub clumps make up 2.15 acres, drainage areas make up 15.02 acres and steep slopes make up 17.03 acres. Total disturbed area, including the Aberdeen Mine left fork fan is 33.84 acres.

Source of Data

Department of the Interior, 1979. Final Environmental Statement, Development of Coal Resources in Central Utah; Part 1 Regional Analysis; Part 2 Site Specific Analysis.

United States Department of Agriculture, Soil Conservation Service, May, 1980. Soil Survey and Interpretations, Vegetation Survey.

Centennial Coal Associates, May, 1976 Mining Application. Submitted to the United States Geologic Survey, Conservation Branch.

A.M.C.A. Coal Leasing, June, 1978 Mining and Reclamation Plan (Zion's fee). Submitted to the State of Utah, Department of Natural Resources, Division of Oil, Gas, and Mining.

Revised 10/21/94

development wastes (please see Part 0 in this chapter). Any underground development waste or excess spoil which was generated while putting in the Aberdeen portals, has been used as stock pile pad material at the Aberdeen Minesite. The volume of this material is minimal.

- 11) Plates 16 and 17 show the final reclamation contours and configuration of the surface for Phases I and II respectively.
- 12) Subsidence monitoring points are shown on Plate 25. An additional station was added to Plate 25 to cover pillar extraction on the new AEP Lease. Also new stations were added under the Graves and Hoffman Creek Leases. Water monitoring location are shown on Figure IV-11. Additional water monitoring will be added as station 12-1 in Alrad Canyon below the AEP lease.
- 13) There will be no facilities left on the permit area permanently with the exception of the roads through the right and left forks of Deadman Canyon. After the completion of underground mining, all facilities will be removed with the exception of one downstream sedimentation pond. This pond will be removed upon final reclamation.
 - c) Maps, plans, and cross sections required under
 - b) (5), (6), (10), and (11) have been prepared under the direction of, and certified by a registered professional engineer. Assistance has come from a registered land surveyor.
 - 1) Detailed maps, plans, and cross sections for our sediment ponds, Plates 11, 12, and 13 have been certified by a registered professional engineer.
 - 2) Andalex has not used any excess spoil or underground development waste maps or cross sections. A map depicting the location of non-coal waste storage is included as Plate 6. Please refer to Part 0 in this chapter.

R645-301-331.

MINIMIZING IMPACT AND SURFACE EROSION

Revegetation Plan

Revegetation

Revegetation will be accomplished by Andalex or under Andalex's direct supervision and under the recommendations of the regulatory authority (see Plates 19 and 20). Revised 10/21/94

General Requirements

Most of the maps previously submitted as part of the Mining and Reclamation Plan are applicable. Where necessary, original maps have been revised to indicate the newly acquired lease area and these revisions are included with this submittal as figures or as plates in Volume II.

All categories within this section have been addressed, primarily in Volume II of the MRP which contains most of the plates.

- a) Surface and subsurface ownership of lands contiguous to the permit area are shown on Plates 2 and 3. This information can also be found in Volume I, Chapter II, 782.13, part 1.
- b) The leases for which we have the legal right of entry are shown on Plate 4. This information is also in Chapter II of Volume I.
- c) Andalex has submitted a permit modification to include the new AEP Lease recently acquired. Also, a permit will be sought in 1994 for a new fan installation immediately adjacent to Andalex's leases in the left hand fork in Deadman Canyon.
- d) There are no buildings within 1,000 feet of the permit area except those used as part of the mining operation. They are shown on Plates 6 and 7.
- e) There are no surface or subsurface man-made features within, passing through or passing over the permit area except the powerline, telephone cables, culverts, and etc., installed for the operation of this mine. See Plate 6 for their locations.
- f) These reference areas are shown on Plate 9 as R-1, R-3 and R-4. They are each 200 feet square approximately.
- g) The only user of surface water within this immediate hydrologic area is Andalex (Refer to Figure 5, Appendix L, which shows additional water use on Emma Park in the form of stock watering). Water rights for this area are found in Appendix L Tables 1 and 5. The intake location for this water into the mine is located on Plate 6. Disturbed area runoff is collected in a culvert and taken directly into the mine. Andalex controls this water right. If a discharge were to occur from any sediment pond (this has yet to occur), it would discharge into the Deadman Canyon drainage (Plate 21) which is ephemeral.
- h) County Road 299 starts at highway 6 in Price and terminates at Andalex Resources' minesite (Plate 1). Revised 10/21/94

General Requirements

Most of the maps previously submitted as part of the Mining and Reclamation Plan are applicable. Where necessary, original maps have been revised to indicate the newly acquired lease area and these revisions are included with this submittal as figures or as plates in Volume II. An archaeological clearance for the left fork fan installation can be found in Appendix C.

All categories within this section have been addressed, primarily in Volume II of the MRP which contains most of the plates.

- a) Surface and subsurface ownership of lands contiguous to the permit area are shown on Plates 2 and 3. This information can also be found in Volume I, Chapter II, 782.13, part 1.
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Revised 10/21/94

- h) County Road 299 starts at highway 6 in Price and terminates at Andalex Resources' minesite (Plate 1).
- i) There are no public parks nor any cultural or historical sites eligible for listing in the National Register in or adjacent to the mine plan area.
- j) There is no land which is within the boundaries of any units of the National System of Trails or the Wild and Scenic Rivers System including study rivers.

R645-301-411.141. CULTURAL AND HISTORIC RESOURCES MAPS

N/A

R645-301-411.141.1 PUBLIC PARKS AND LOCATIONS OF ANY CULTURAL OR HISTORICAL RESOURCES

N/A

R645-301-411.141.2 CEMETERIES

There are no cemeteries or burial grounds in or within 100 feet of the permit area.

R645-301-411.141.3 NATIONAL SYSTEM OF TRAILS OR THE WILD AND SCENIC RIVERS SYSTEM

N/A

R645-301-411.142. COORDINATION WITH THE STATE HISTORIC PRESERVATION OFFICER (SHPO)

Appendix A

R645-301-411.142.1 PREVENTION OF ADVERSE IMPACTS

Appendix A

R645-301-411.142.2 VALID EXISTING RIGHTS OR JOINTS AGENCY APPROVAL

Appendix A
Revised 10/21/94

Barrier Pillars

A barrier pillar will be left between the bleeders and the longwall panels. A barrier will also be left wherever old mine workings are skirted such as the Olsen Mine on the east side of Deadman Canyon in the Gilson Seam.

Bleeder System

A bleeder system will be maintained and pillars left to provide for ventilation, eventually extending around all mined out areas.

Ventilation

The ventilation plan calls for a fan of sufficient capacity to provide air to each working section to control methane and dust; there has been small amounts only found to date in any of the old works or new faces. The longwall faces will be ventilated with a live brattice system consisting of a line curtains. The conveyor systems will be isolated from intake and return except in 2 entry gate systems when the belt will double as the intake. All ventilation requirements of the Coal Mine Health and Safety Act will be met. This ventilation plan will be strictly adhered to, in order to insure safety of all personnel. Please note that the Centennial Seam mining area is ventilated by the existing Pinnacle Mine fan system. The new left fork fan installation will provide additional required ventilation for the Aberdeen Mine longwall faces.

Roof Control

All Andalex Mines operate under an approved M.S.H.A. roof support plan which calls for bolting on five foot centers with a minimum 42" bolt length in our development entries. Roof control in the longwall faces will be accomplished using hydraulic shields. The roof in all four seams is a massive sandstone (60'+) and offers excellent support in itself. The old mine workings which were rehabilitated for the Pinnacle Mine main entries had stood unsupported for 40 years. This roof control plan will be strictly adhered to, in order to insure the safety of all personnel.

Explosives and Blasting

All blasting performed underground will conform to both state and federal regulations governing explosives and blasting in underground coal mines. The rock tunnels to the Centennial Seam were constructed by professional hard rock mining company.

All surface blasting activities necessary for present operations have been completed in compliance with sections 817.61 through

Revised 10/21/94

Regulations. Blasting consisted of portal highwall construction for purposes of stability. A powder magazine has been set up on one of the surface pads, located in a remote area. It is built to conform to all regulations, such as segregation, regarding such a structure (see plate 6). All blasting operations shall be conducted by experienced, trained, and competent persons who understand the hazards involved and who possess a valid certificate as required by Title 30 of the Code of Federal Regulations.

General Safety Measures

A great emphasis is put on assuring a safe mine operation and the mine and surface facilities will be operated within prudent standards to insure the health and safety of all employees. The facilities will be carefully inspected by company-trained safety engineers and state and federal mine inspectors.

The operation will abide by Utah State Coal Mine Regulations and the 1969 Federal Coal Mine Health and Safety Act. In addition, these regulations will be supplemented by a company safety policy. Various training programs will be utilized such as the following:

- Methane Measurements
- Roof and Rib Control
- Oxygen Deficiency Testing
- Ventilation
- First Aid
- Mine Rescue
- Mine Electrical Certification
- Self Rescue Training
- Use of Personal Protective Equipment
- Recognition of Electrical Hazards
- General Accident Prevention
- Mine Communications
- Job Safety Training

Many of the training programs will run continuously, such as those involving roof control and ventilation. Other programs are held annually with many oriented toward new employees.

Mine Development (Refer to Plates 26, 27, 28 and 29).

Room and Pillar

Room and pillar design will be employed in fringe areas surrounding the longwall panels as conditions allow.

Pillar Extraction

Once development in fringe areas is completed, pillar extraction will commence as conditions permit. Final pillar extraction will result in a total recovery rate of approximately 65 percent.

Revised 10/21/94

As the left hand fork is classified as a intermittent drainage, stream buffer zone markers will be placed within 100 feet of the drainage disallowing access except for the disturbed site. As there are no perennial streams or a stream with a biological community on the permit area, buffer zone markers will not be necessary. The perimeters of all areas affected by surface operations and facilities are clearly marked. These signs and markers shall be maintained during all activities and retained and maintained until after the release of all bonds for the permit area.

R645-301-512.120. SURFACE FACILITIES AND OPERATIONS

See Volume II.

Support structures and buildings are shown on Plates 6 and 7 and LF-1.

Parking Areas

Parking areas have been covered with gravel and magnesium chloride and will be maintained. These are shown on Plate 6. The main office parking area is paved.

Storage Areas

There are several storage areas at the site. These include the Material Storage Area No. 1, Raw Coal Pile Area, Material Storage Area No. 2, and the Topsoil Storage Area. All areas are shown on Plate 6.

R645-301-512.130. SURFACE CONFIGURATIONS

See Volume II, Plates 6 and 7.

R645-301-512.140. HYDROLOGY

Introduction

Water quality monitoring stations will be set up at the wells as shown on Figure IV-11, and also at the sedimentation pond discharge structures.

Sewage System

The nature of the overburden in the area offers excellent drainage. As a result, a septic system with drain fields conforming to the state codes has been established to handle the waste water disposal from the bathhouse and office facilities. The drain fields are
Revised 10/21/94

It should be noted however, that the immediate "floor" below the seams is sandstone in the case of the Lower Sunnyside and Aberdeen; and beneath the Gilson, and Centennial, siltstone.

Pyritic Content (Laboratory Analyses)

Complete analyses of these strata are included in Appendix E.

Potential Alkalinity (Laboratory Analyses)

Complete analyses of these strata are included in Appendix E.

Clay Content (Laboratory Analyses)

Complete analyses of these strata are included in Appendix E.

R645-301-512.200. PLANS AND ENGINEERING DESIGNS

Existing Structures

All existing structures are situated on the Zion's fee land, on federal lease SL-027304, or on right-of-way UTU-62045 and are shown on Plate 6. There are no structures existing as part as Andalex's facility which were constructed prior to 1980. Originally it was anticipated that all buildings and structures were to be completed during the first five year permit term. Obviously this is not the case since the Aberdeen Mine has only recently been completely finished to this date. Plate 6 depicts the Aberdeen Mine with the surface facilities completed in early 1990. A new fan for the Aberdeen Mine will be constructed in the left fork of Deadman Canyon. Underground rock tunnels access the Centennial Seam. See 1.1, 2.1-1, 2.1-4.

Existing structures include the following:

Bathhouse (3)	14' x 60'
Mine Water Storage Tanks (3)	12' x 16'
Warehouse (1)	14' x 60'
Lamphouse (2)	40' x 40'
Main Substation	60' x 100'
Office Building	28' x 60'
Mine Fans (4)	88"
Portals (15)	6' x 20'
Culinary Water Tanks (3)	12' x 10'
Shop	80' x 120'

Revised 10/21/94

The Aberdeen Mine surface facilities will include one additional bathhouse, and one lamphouse.

Upon completion of mining activities, the portals will be sealed according to existing state and federal regulations and all buildings and structures not being utilized as part of the reclamation sequence, will be removed, according to the Reclamation Plan outlined in Part F of this Chapter.

Construction Schedule

All of the above structures have been completed. The earthwork for the Aberdeen Mine was completed in 1989. The surface facilities were in early 1990. Construction has been located and carried out so as to prevent and control erosion, siltation, water pollution, and damage to property. All facilities have been designed and constructed and will be maintained and used in a manner which prevents damage to wildlife and related environmental values. Any future construction will be conducted in a similar manner according to regulations regarding protection of the hydrologic system, etc. The rock tunnels for the Centennial Seam development were constructed in the spring of 1990 and completed late in 1990. As previously discussed this mining will require no new surface facilities except the left fork fan installation (1994).

Construction Methods

Major Equipment

The portal and building sites were leveled using dozers, trucks, and loaders. At the building sites, the topsoil was removed and transported to a nearby area for storage.

All surface pads have been graveled and all other disturbed areas (pond embankments, etc.) have been reseeded.

R645-301-512.210. EXCESS SPOIL

N/A

R645-301-512.220. DURABLE ROCK FILLS

N/A

Revised 10/21/94

TABLE IV-3C (Continued)
DISTURBED AREA CULVERT DESIGN

<u>STRUCTURE</u>	<u>CD-14</u>	<u>CD-15</u>	<u>CD-16</u>	<u>CD-17</u>	<u>CD-18</u>
10yr.-6hr. Event (in)	1.25	1.25	1.25	1.25	1.25
Manning's Number (n)	0.025	0.025	0.025	0.025	0.0025
Culvert Slope (%)	3.50	3.50	6.25	5.56	57.74
Peak Flow 10/6 (cfs)	1.35*	2.84**	4.65***	4.65***	0.29
Velocity 10/6 (fps)	3.51	4.20	5.90	5.65	6.79
Diam. Req'd. (ft.)	0.70	0.93	1.00	1.02	0.23
Diam. In Place (ft.)	1.50	1.50	2.00	2.00	1.50

- * Based on entire flow from DD-1.
- ** Based on entire flows from DD-2, DD-10 & DD-11
- *** Based on entire flow from DD-4.

Revised 10/21/94

Primary Road 11 (PR-11) - This is a very short access road which accesses the bath house pad from two directions; both from PR-1 and from PR-4. This road is approximately 12 feet wide and 150 feet long. It is a single lane road with a grade of 0% to 6%. This road is treated with magnesium chloride annually.

Ancillary Road 1 (AR-1) - This is an access road which leads from the south Aberdeen intake portal to the Aberdeen mine fan. It is a single lane road which has a surface of sandstone. The road is used primarily for access to the fan, water system and conveyor. This road is approximately 20 feet wide and 400 feet long. There is a steel deck bridge over the Aberdeen mine conveyor. The grade on this road ranges from 8% to 10%.

Ancillary Road 2 (AR-2) - This road leads from the upper Pinnacle Mine intake portals to the Pinnacle Mine fan. It is a single lane gravel surfaced road which has a steel deck bridge where the road crosses the Pinnacle Mine conveyor. Its primary use is to access the Pinnacle Mine fan. It is approximately 12 feet wide and 250 feet long. The grade on this road ranges from 0% to 12%.

Ancillary Road 3 (AR-3) - This road leads from PR-2 up to the Apex material storage area (Gun range). This is a single lane gravel surface road which is approximately 12 feet wide and 175 feet long. The grade on this road is on an average of 9%. It is treated with Magnesium Chloride annually. It is used primarily for access.

Ancillary Road 4 (AR-4) - This road is access from the upper Apex material storage area to the Powder Magazines. This road continues beyond the north end of our permit area but it becomes a private road beyond the permit area. This is a single lane dirt road which is approximately 12 feet wide and 150 feet long. The grade on this short stretch of road is 5% to 8%.

Ancillary Road 5 (AR-5) - This road is access from Carbon County Road 299 to the left hand fork installation. This existing road will be upgraded adequately for maintenance and emergency access only. It will be equipped with a locked gate. This is a single lane dirt road which is approximately 15 feet wide and 4000 feet long. There will be 3 or 4 locations specifically widened so that two vehicles may pass. The grade on this stretch of road ranges from 0% to 15%.

Andalex commits to repair roads damaged by a catastrophic event according to R645-301-527.240. According to R645-301-534.100 Andalex has located, designed, constructed, used and maintained Primary Roads so as to prevent or control damage to private and public property. Andalex has used non-acid or non-toxic forming materials in road surfacing. Roads have, at a minimum a static safety factor of 1.3 on embankments. Andalex has a schedule and plan to remove roads that will not be retained as part of the

the location of springs in the permit area and adjacent areas. This figure, along with Figures 5 and 6, depict the areal extent of the inventory.

- h) N/A
- i) Plate 6 shows the location of development waste stored in an area which was previously used as a sediment pond. Plate 6 now also shows the location of a new area above the Apex Mine which can be used for temporary and permanent storage of development waste such as sediment pond material. Also, please see Part O of Chapter IV. All dams and impoundments are shown on Plates 6 and 7, and detailed on Plates 11, 12, and 13. There are no other water treatment or air pollution control facilities on the permit area.
- j) There are no oil or gas wells within the permit area. Three water wells are shown on Plate 6. Well number 1 is 220 feet deep; number 2 is 100 feet deep, and number 3 is 120 feet deep.
- k) Plates 14 and 15 accurately depict the area currently affected by mining as well as the area to be affected. They show the slopes as they exist as well as after construction and upon final reclamation.

Operation Plan: Maps and Plans

- 1) Most of the maps and plans previously submitted as part of the approved Mining and Reclamation Plan, are applicable. Where necessary, the original maps have been revised to indicate the lease in Hoffman Creek and the revisions are included in this submittal in Volume II.

All necessary maps and plans to complete this section are found in Volume II of the submittal and also in the appendices of Volume I (please see table of contents following 784.23 in Chapter V). Specifically,

- a) Underground coal mining activities to be conducted and lands to be affected by surface facilities are shown on Plates 6, 29, 30, 31 and 41.
 - b-1) Buildings, utilities, and facilities are depicted on Plates 6 and Plate LF-1.
- 2) The area to be affected is shown on several plates, including 4, 5, 6, 29, 30, 31 and 41. These last four plates show the sequence of mining in the four seams over the five year term of the permit. Plate 30 has been revised to show immediate development in the Gilson Seam as soon as approval is

Revised 10/21/94

1. Single-lane, gravel or asphalt surfaced roads approximately 12 - 15' wide; and
2. Double-lane, either gravel or asphalt surfaced roads, approximately 26' wide.

Although all roads on site are not used for coal hauling, each primary road is constructed to the respective typical design and dimensions shown on Plate 35.

All roads are shown on Plate 6 and Plate 8. Specifics about the road are described individually and include road widths, gradients and surfaces. Drainage ditches and drainage structures for each road (disturbed area ditches or culverts) can be found in chapter IV in tables IV-2 through IV-8.

Because of the variance in road types, widths and lengths, the roads have been designated on Plate 6 with numbers (i.e. PR-1= Primary Road 1, Ar-1= Ancillary Road 1) to facilitate the description of each:

Primary Road 1 (PR-1) - This road connects Carbon County Road 199 to the two lane paved road which travels past the Aberdeen Mine facilities, past the office driveway and bath house drive ways and past the Pinnacle truck loadout. This is an asphalt surfaced road approximately 26 feet wide and 2700 feet long. The grade on PR-1 ranges from 4% to 8%. It is used for hauling coal and for men and material access to the mines.

Primary Road 2 (PR-2) - This road begins at the end of PR-1 and continues north past the shop/warehouse and ends at the eastern side of the Apex Mine stockpile. This is a two lane gravel surfaced road which is approximately 26 feet wide and 1400 feet long. It is treated annually with Magnesium Chloride. The grade on this stretch of road ranges from 5% to 9%. It is used for hauling coal and equipment as well as providing men and materials access to the mines.

Primary Road 3 (PR-3) - This road provides access to the Aberdeen Mine truck loadout. It is a single lane gravel surface road approximately 15 feet wide and 590 feet long. It is treated with Magnesium Chloride annually. The grade on this road ranges from 0% to 4%.

Primary Road 4 (PR-4) - This road provides access for the coal haul trucks to the Pinnacle Mine truck loadout. It is also crossed to access the bath house parking area. This is a single lane, paved surface road which is approximately 15 feet wide and 500 feet long. The grade on this loop ranges from 0% to 9%.

Primary Road 5 (PR-5) - This road provides access for the coal haul trucks coming off of PR-2 to the Apex Mine truck loadout. It
Revised 10/21/94

is a single lane gravel surfaced road approximately 15 feet wide and 425 feet in length. The grade on this road ranges from 0% to 7%. It is treated annually with Magnesium Chloride. The three truck loadout roads are also accessed by front-end loaders for the purpose of cleaning up occasional coal spills.

Primary Road 6 (PR-6) - This is an access road which leads to the main office parking area. It is a single lane, paved surface road which is approximately 15 feet wide and 600 feet long. The average grade of this road is 5% to 7%.

Primary Road 7 (PR-7) - This is an access road for mining equipment. It provides heavy equipment access to and from the Aberdeen Mine. It begins at the south inlet to pond C and it ends at the bath house parking area. It is a gravel surfaced road and is approximately 12 feet wide and 450 feet long. It has grades which range from 4% to 14%. Magnesium Chloride is applied annually.

Primary Road 8 (PR-8) - This road leads from the fuel storage area at the Pinnacle Mine facility to the oil storage area near the upper Pinnacle portals. This is a single lane, gravel surface road approximately 15 feet wide and 325 feet long. The grade on this road has a range of 9% to 11%. It is treated with Magnesium Chloride annually.

Primary Road 9 (PR-9) - This road leads from PR-2 and turns west over the top of the Apex Mine conveyor belt. The road leads to the Apex Mine material storage area, adjacent to the mine fan. This is a single lane gravel surfaced road which is approximately 15 feet wide and 200 feet long and includes a steel deck bridge over the mine conveyor. The grade on this road ranges between 0% and 8%, and the gravel is treated with Magnesium Chloride.

Primary Road 10 (PR-10) - This is an access road which leads from the upper Aberdeen Mine material storage area down to the Aberdeen Mine stockpile pad. This is a short stretch of road which is approximately 12 feet wide and 150 feet long. It is a single lane road with an average grade of 12% to 15%.

Primary Road 11 (PR-11) - This is a very short access road which accesses the bath house pad from two directions; both from PR-1 and from PR-4. This road is approximately 12 feet wide and 150 feet long. It is a single lane road with a grade of 0% to 6%. This road is treated with magnesium chloride annually.

Ancillary Road 1 (AR-1) - This is an access road which leads from the south Aberdeen intake portal to the Aberdeen mine fan. It is a single lane road which has a surface of sandstone. The road is used primarily for access to the fan, water system and conveyor. This road is approximately 20 feet wide and 400 feet long. There

Revised 10/21/94

is a steel deck bridge over the Aberdeen mine conveyor. The grade on this road ranges from 8% to 10%.

Ancillary Road 2 (AR-2) - This road leads from the upper Pinnacle Mine intake portals to the Pinnacle Mine fan. It is a single lane gravel surfaced road which has a steel deck bridge where the road crosses the Pinnacle Mine conveyor. Its primary use is to access the Pinnacle Mine fan. It is approximately 12 feet wide and 250 feet long. The grade on this road ranges from 0% to 12%.

Ancillary Road 3 (AR-3) - This road leads from PR-2 up to the Apex material storage area (Gun range). This is a single lane gravel surface road which is approximately 12 feet wide and 175 feet long. The grade on this road is on an average of 9%. It is treated with Magnesium Chloride annually. It is used primarily for access.

Ancillary Road 4 (AR-4) - This road is access from the upper Apex material storage area to the Powder Magazines. This road continues beyond the north end of our permit area but it becomes a private road beyond the permit area. This is a single lane dirt road which is approximately 12 feet wide and 150 feet long. The grade on this short stretch of road is 5% to 8%.

Ancillary Road 5 (AR-5) - This road is access from Carbon County Road 299 to the left hand fork installation. This existing road will be upgraded adequately for maintenance and emergency access only. It will be equipped with a locked gate. This is a single lane dirt road which is approximately 15 feet wide and 4000 feet long. There will be 3 or 4 locations specifically widened so that two vehicles may pass. The grade on this stretch of road ranges from 0% to 15%.

Andalex commits to repair roads damaged by a catastrophic event according to R645-301-527.240. According to R645-301-534.100 Andalex has located, designed, constructed, used and maintained Primary Roads so as to prevent or control damage to private and public property. Andalex has used non-acid or non-toxic forming materials in road surfacing. Roads have, at a minimum a static safety factor of 1.3 on embankments. Andalex has a schedule and plan to remove roads that will not be retained as part of the approved post mining land use (see chapter IV, section F.) Ancillary roads will be travelled only by light vehicles for routine access. Occasionally, they will be travelled by larger equipment but probably only in emergency or repair situations, as 2 of the 4 Ancillary Roads lead to fan installations. All Primary Roads will meet the requirements of R645-301-358, R645-301.527.100, R645-301-527.230, R645-301-534.100, R645-301-534.200, R645-301-542.600 and R645-301-762. Primary Roads will be located in so far as practical on the most stable available surfaces. The roads are surfaced with rock, gravel or asphalt according to R645-301-534.320. They will be routinely maintained, and have culverts which are designed and installed as necessary according to the requirements of R645-301-534.340.

Revised 10/21/94

Aberdeen Mine

Restoration to the pre-mining land use will require:

	<u>Job Description</u>	<u>Equipment</u>	<u>Hours</u>	<u>Cost</u>
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
3)	a. Seal Portals, fill cut slope	Loader	8	\$ 640
	b. Remove culvert	Backhoe	25	2,000
	c. Contour stream channel	D-7	16	1,280
	d. Contour slope	D-7	16	1,280
	e. Compact	Loader	8	640
	f. Replace topsoil	Loader	16	1,200
	g. Revegetation	Drill	2	100
	h. Stake slope	Engineer	8	400
	Total Stockpile Area:			\$ 7,540

Revised 10/21/94

Office Site

Restoration to pre-mining land use will require:

<u>Job Description</u>	<u>Equipment</u>	<u>Hours</u>	<u>Cost</u>
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:			<u>\$ 5,610</u>
2. Seal Well (1)			
a. Fill, cement		4	\$ 400
Total Well:			<u>\$ 400</u>
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:			<u>\$ 990</u>
<u>Total Projected Reclamation Costs:</u>			
Lower Sunnyside Mine			\$ 29,410
Gilson (Pinnacle) Mine			43,420
Aberdeen Mine			27,200
Office Site			7,000
Monitoring (5 years)			10,000
Total Reclamation, 1987 \$			<u>\$117,490</u>
Contingency 10%			<u>11,750</u>
Grand Total*			<u>\$129,240</u>

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

Revised 10/21/94

As Constructed Earthwork Volume (Aberdeen Mine and Left Fork Fan)

Cut	72,406 yds. ³
Fill	76,925 yds. ³
Topsoil	4,250 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)	
76,925 + 7693 =	84,618 @ \$2.25
112,969 + 11,297 =	124,266 @ \$2.25
	208,884 @ \$2.25 = \$469,989
Topsoil Hauling and Placement	
22,750 + 2275 =	25,025 @ \$5.71 = \$142,893
Compaction	
158,294 @ \$.21 =	\$33,242
Total Earthwork:	\$646,124

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 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.

Revised 10/21/94

Primary Road 10 (PR-10) - This is an access road which leads from the upper Aberdeen Mine material storage area down to the Aberdeen Mine stockpile pad. This is a short stretch of road which is approximately 12 feet wide and 150 feet long. It is a single lane road with an average grade of 12% to 15%.

Primary Road 11 (PR-11) - This is a very short access road which accesses the bath house pad from two directions; both from PR-1 and from PR-4. This road is approximately 12 feet wide and 150 feet long. It is a single lane road with a grade of 0% to 6%. This road is treated with magnesium chloride annually.

Ancillary Road 1 (AR-1) - This is an access road which leads from the south Aberdeen intake portal to the Aberdeen mine fan. It is a single lane road which has a surface of sandstone. The road is used primarily for access to the fan, water system and conveyor. This road is approximately 20 feet wide and 400 feet long. There is a steel deck bridge over the Aberdeen mine conveyor. The grade on this road ranges from 8% to 10%.

Ancillary Road 2 (AR-2) - This road leads from the upper Pinnacle Mine intake portals to the Pinnacle Mine fan. It is a single lane gravel surfaced road which has a steel deck bridge where the road crosses the Pinnacle Mine conveyor. Its primary use is to access the Pinnacle Mine fan. It is approximately 12 feet wide and 250 feet long. The grade on this road ranges from 0% to 12%.

Ancillary Road 3 (AR-3) - This road leads from PR-2 up to the Apex material storage area (Gun range). This is a single lane gravel surface road which is approximately 12 feet wide and 175 feet long. The grade on this road is on an average of 9%. It is treated with Magnesium Chloride annually. It is used primarily for access.

Ancillary Road 4 (AR-4) - This road is access from the upper Apex material storage area to the Powder Magazines. This road continues beyond the north end of our permit area but it becomes a private road beyond the permit area. This is a single lane dirt road which is approximately 12 feet wide and 150 feet long. The grade on this short stretch of road is 5% to 8%.

Ancillary Road 5 (AR-5) - This road is access from Carbon County Road 299 to the left hand fork installation. This existing road will be upgraded adequately for maintenance and emergency access only. It will be equipped with a locked gate. This is a single lane dirt road which is approximately 15 feet wide and 4000 feet long. There will be 3 or 4 locations specifically widened so that two vehicles may pass. The grade on this stretch of road ranges from 0% to 15%.

Andalex commits to repair roads damaged by a catastrophic event according to R645-301-527.240. According to R645-301-534.100
Revised 10/21/94

Andalex has located, designed, constructed, used and maintained Primary Roads so as to prevent or control damage to private and public property. Andalex has used non-acid or non-toxic forming materials in road surfacing. Roads have, at a minimum a static safety factor of 1.3 on embankments. Andalex has a schedule and plan to remove roads that will not be retained as part of the approved post mining land use (see chapter IV, section F.) Ancillary roads will be travelled only by light vehicles for routine access. Occasionally, they will be travelled by larger equipment but probably only in emergency or repair situations, as 2 of the 4 Ancillary Roads lead to fan installations. All Primary Roads will meet the requirements of R645-301-358, R645-301.527.100, R645-301-527.230, R645-301-534.100, R645-301-534.200, R645-301-542.600 and R645-301-762. Primary Roads will be located in so far as practical on the most stable available surfaces. The roads are surfaced with rock, gravel or asphalt according to R645-301-534.320. They will be routinely maintained, and have culverts which are designed and installed as necessary according to the requirements of R645-301-534.340.

Railroad

There are no existing or proposed railroad spurs on the property.

Other Transportation Facilities

The conveyor structures at the minesite are very standard cross member, bent designs. The Pinnacle conveyor is 180 feet in length and uses a 42" conveyor belt. It is covered with galvanized corrugated sheeting. The Pinnacle Truck Loadout is an under pile gravity feed reclaim system in 8 foot diameter sectioned steel tunnel for 90 feet and surfaces on the typical bent, steel structure for an additional 110 feet. The Apex truck loadout is identical to Pinnacle. The mine conveyor is also the same bent/cross member design with a 42" conveyor; however, it is 250 feet in length. The Aberdeen facility is equipped with conveyor facilities similar to that of Pinnacle with only slight variations in exact length anticipated or possible. These facilities will be completed in early 1990.

Transportation facilities such as roads have been addressed. The roads, Class II and I are to be removed upon cessation of mining by simple regrading and re-establishment of contours, unless surface owners request access through the mine area might remain.

Protection of the environment through the use of these facilities is achieved by speed controls (20 mph minesite). The conveyor structures as such do not impose environmental problems. Public safety obviously is a requirement of law including MSHA but also public safety is a requirement of Andalex Resources. Also the minesite is not frequented by any public outside of normal, weekly business hours.

Revised 10/21/94

R645-301-542.610. CLOSURE

See R645-301-240.

R645-301-542.620. REMOVAL OF BRIDGES AND CULVERTS

Post Mining Hydrology

Upon completion of mining activities, and following removal of surface structures, the earthwork portion of the reclamation plan will begin as described in Part F, Section 3. The hydrologic portion of reclamation will take place in two phases including the left fork fan installation:

1. The main and side drainage channels will be restored as shown in the Sedimentation and Drainage Control Plan, and on Plate 16. Loose rock check dams will be placed at each side drainage entrance onto the reclaimed area, and at approximately 500' intervals along the restored main channel RC-1. (Typical sections of the loose rock check dams are shown in the Sedimentation and Drainage Control Plan).

All disturbed diversions and sediment ponds "B" and "C" will also be removed at this time. Sediment Pond "E" will be enlarged, and the entire drainage above will flow into Pond "E-PM" through the restored channel RC-1.

2. Once revegetation and water quality standards are met, Pond "E-PM" will be removed, and the area reclaimed.

Surface water monitoring will continue during this time as described in Sections 3.1-1.1 and 3.1-1.2. Please see Figure IV-11.

R645-301-542.630. TOPSOIL REPLACEMENT AND REVEGETATION

Backfilling, Grading, and Soil Replacement and Stabilization

All disturbed areas will be backfilled and graded to as near as possible the approximate original contour, and to the most moderate slope possible. Slopes shall not exceed the angle of repose or such lesser slopes as required by the regulatory authority to maintain stability. Fill material will be compacted to assure stability.

Andalex has had a slope stability study performed on a fill pad with a slope greater than 2h:1v and it was determined, even prior to compaction, that the fill had an adequate safety factor. Refer to Appendix K for this study done at the Pinnacle Mine. Andalex Revised 10/21/94

R645-301-724.200. SURFACE WATER INFORMATION

Appendix L

R645-301-724.300. GEOLOGIC INFORMATION

Appendix L

R645-301-724.310. PROBABLE HYDROLOGIC CONSEQUENCES

Appendix L

R645-301-724.320. RECLAIMABILITY

Post Mining Hydrology

Upon completion of mining activities, and following removal of surface structures, the earthwork portion of the reclamation plan will begin as described in Part F, Section 3. The hydrologic portion of reclamation will take place in two phases including the left hand fork fan installation:

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Surface water monitoring will continue during this time as described in Sections 3.1-1.1 and 3.1-1.2. Please see Figure IV-11.

Revised 10/21/94

Cost of Reclamation

Detailed Estimate

A detailed cost projection follows and includes reclamation of the left hand fork fan installation

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.

Revised 10/21/94

Aberdeen Mine

Restoration to the pre-mining land use will require:

	<u>Job Description</u>	<u>Equipment</u>	<u>Hours</u>	<u>Cost</u>
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:			<u>\$ 6,600</u>
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:			<u>\$13,060</u>
3)	a. Seal Portals, fill cut slope	Loader	8	\$ 640
	b. Remove culvert	Backhoe	25	2,000
	c. Contour stream channel	D-7	16	1,280
	d. Contour slope	D-7	16	1,280
	e. Compact	Loader	8	640
	f. Replace topsoil	Loader	16	1,200
	g. Revegetation	Drill	2	100
	h. Stake slope	Engineer	8	400
	Total Stockpile Area:			<u>\$ 7,540</u>

Revised 10/21/94

Office Site

Restoration to pre-mining land use will require:

	<u>Job Description</u>	<u>Equipment</u>	<u>Hours</u>	<u>Cost</u>
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:			<u>\$ 5,610</u>
2.	Seal Well (1)			
	a. Fill, cement		4	<u>\$ 400</u>
	Total Well:			<u>\$ 400</u>
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:			<u>\$ 990</u>

Total Projected Reclamation Costs:

Lower Sunnyside Mine	\$ 29,410
Gilson (Pinnacle) Mine	43,420
Aberdeen Mine	27,200
Office Site	7,000
Monitoring (5 years)	10,000
Total Reclamation, 1987 \$	<u>\$117,490</u>
Contingency 10%	<u>11,750</u>
Grand Total*	<u>\$129,240</u>

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

Revised 10/21/94

As Constructed Earthwork Volume (Aberdeen Mine and Left Fork Fan)

Cut	72,406 yds. ³
Fill	76,925 yds. ³
Topsoil	4,250 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)	
76,925 + 7693 =	84,618 @ \$2.25
112,969 + 11,297 =	<u>124,266 @ \$2.25</u>
	208,884 @ \$2.25 = \$469,989
Topsoil Hauling and Placement	
22,750 + 2275 =	25,025 @ \$5.71 = \$142,893
Compaction	
158,294 @ \$.21 =	\$33,242
Total Earthwork: \$646,124	

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 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.

Revised 10/21/94



BLACKHAWK ENGINEERING, CO.

Rt. 1, Box 146-H5 - Helper, Utah 84526 - Telephone (801) 637-2422

To: Mike Glasson
From: Dan Guy
Subject: Culvert Sizing for Left Fork of Deadman Canyon
Date: September 9, 1994

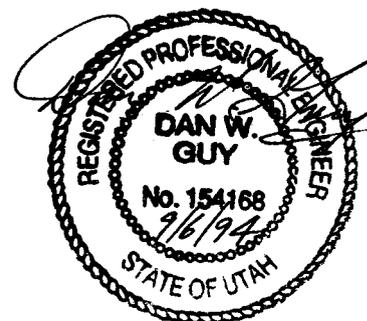
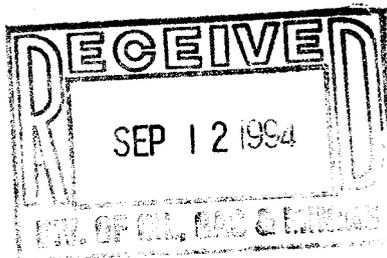
Per your request, I have run out some calculations to size the proposed upper and main canyon culverts for the Left Fork of Deadman Canyon.

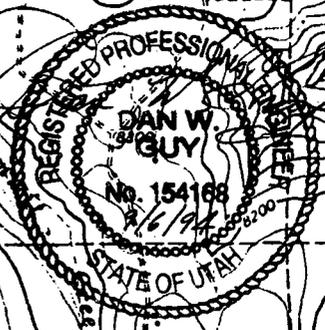
The following parameters were used in the calculations:

<u>Location</u>	<u>Main Canyon Culvert</u>	<u>Upper Canyon Culvert</u>
Area	2075.35 ac.	897.85 ac.
Runoff CN	70	70
Rainfall 10/24	1.82"	1.82"
Rainfall 100/6	1.91"	1.91"
Hydraulic Length	12,000 ft.	8,400 ft.
Slope	20%	20%
Culvert Slope	5%	5%
Flow (10/24)	39.81 cfs	19.89 cfs
Flow (100/6)	73.91 cfs	35.02 cfs
Req'd Diam. (10/24)	2.34 ft.	1.80 ft.
Req'd Diam. (100/6)	2.95 ft.	2.23 ft.
Recommended Diameter	4.00 ft.	3.50 ft.

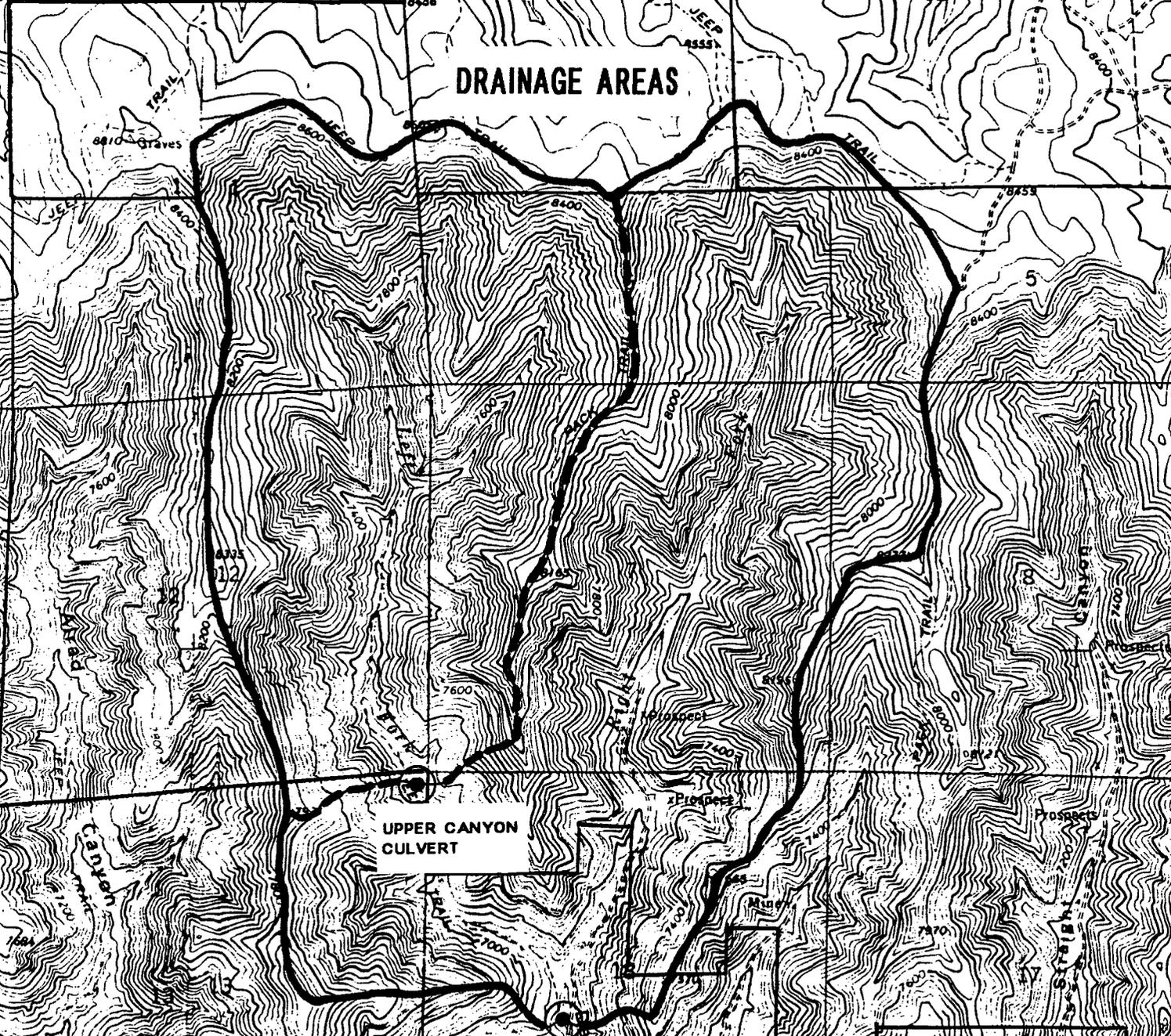
All calculations were based on methods and formulas described in the permit. It should be noted that the permit does allow the use of a runoff curve number of 65 for undisturbed diversions and culverts; however, the more conservative CN of 70 was used for these calculations for design purposes.

Based on the above, I would recommend a minimum culvert size of 48" diameter for the main canyon and a 42" diameter for the upper canyon (fan pad area). This allows for a full 1' + additional diameter beyond that required by the calculations. These sizes will be more than adequate to carry the calculated runoff from a 100 year-6 hour event or a 10 year-24 hour event.





DRAINAGE AREAS



UPPER CANYON
CULVERT

MAIN CANYON
CULVERT

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: MAIN CANYON CULVERT

Comment: BASED ON CN=70 (10/24)

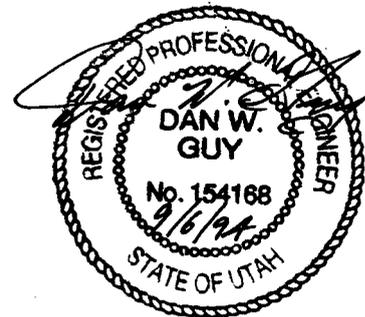
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	39.81 cfs

Computed Results:

Full Flow Diameter.....	2.34 ft
Full Flow Depth.....	2.34 ft
Velocity.....	9.29 fps
Flow Area.....	4.29 sf
Critical Depth....	2.11 ft
Critical Slope....	0.0439 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	39.81 cfs
QMAX @.94D.....	42.82 cfs
Froude Number.....	FULL



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: MAIN CANYON CULVERT

Comment: BASED ON CN=70 (100/6)

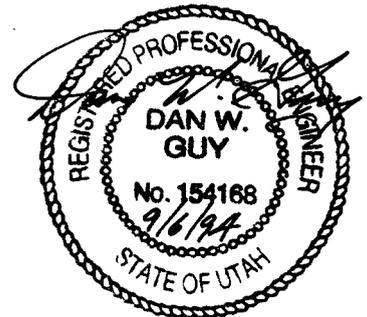
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	73.91 cfs

Computed Results:

Full Flow Diameter.....	2.95 ft
Full Flow Depth.....	2.95 ft
Velocity.....	10.84 fps
Flow Area.....	6.82 sf
Critical Depth....	2.70 ft
Critical Slope....	0.0435 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	73.91 cfs
QMAX @.94D.....	79.51 cfs
Froude Number.....	FULL



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: UPPER CANYON CULVERT

Comment: BASED ON CN=70 (10/24)

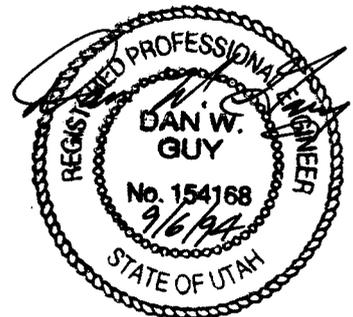
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	19.89 cfs

Computed Results:

Full Flow Diameter.....	1.80 ft
Full Flow Depth.....	1.80 ft
Velocity.....	7.81 fps
Flow Area.....	2.55 sf
Critical Depth....	1.61 ft
Critical Slope....	0.0444 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	19.89 cfs
QMAX @.94D.....	21.40 cfs
Froude Number.....	FULL



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: UPPER CANYON CULVERT

Comment: BASED ON CN=70 (100/6)

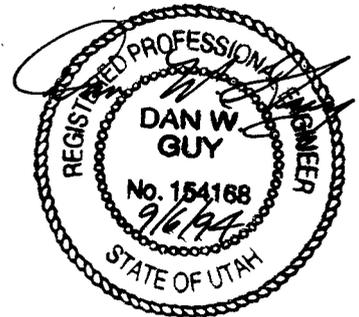
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	35.02 cfs

Computed Results:

Full Flow Diameter.....	2.23 ft
Full Flow Depth.....	2.23 ft
Velocity.....	8.99 fps
Flow Area.....	3.89 sf
Critical Depth....	2.01 ft
Critical Slope....	0.0439 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	35.02 cfs
QMAX @.94D.....	37.67 cfs
Froude Number.....	FULL



PERMIT CHANGE TRACKING FORM

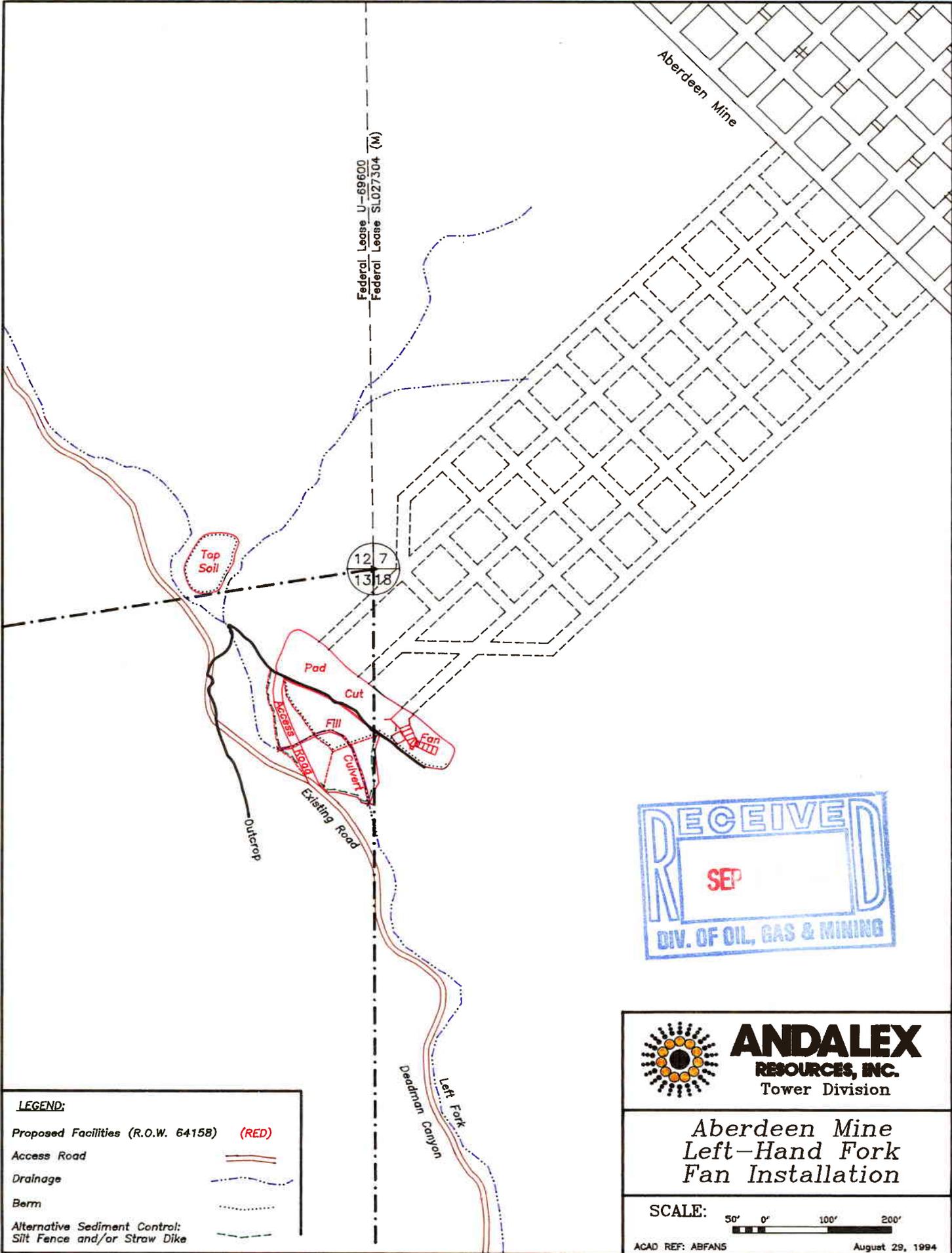
DATE RECEIVED	9/12/94	PERMIT NUMBER	ACT/007/019
Title of Proposal:	Ibe, Remote	PERMIT CHANGE #	946
Description:	Fur Installation	PERMITTEE	Judalex
		MINE NAME	Centennial

<input type="checkbox"/> 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION <input type="checkbox"/> Notice of Review Status of proposed permit change sent to the Permittee. <input type="checkbox"/> Request additional review copies prior to Division/Other Agency review. <input type="checkbox"/> Notice of Approval of Publication. (If change is a Significant Revision.) <input type="checkbox"/> Notice of request to modify proposed permit change prior to approval.	DATE DUE	DATE DONE	RESULT	
				<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED
			Permit Change Classification	
			<input type="checkbox"/> Significant Permit Revision	
			<input type="checkbox"/> Permit Amendment	
			<input type="checkbox"/> Incidental Boundary Change	

REVIEW TRACKING	INITIAL REVIEW		MODIFIED REVIEW		FINAL REVIEW AND FINDINGS	
DOGMR REVIEWER	DUE	DONE	DUE	DONE	DUE	DONE
<input checked="" type="checkbox"/> Administrative <u>Paul</u>	10/14	Paul, Give to Wayne for review when your done				
<input checked="" type="checkbox"/> Biology <u>Paul</u>	10/14					
<input checked="" type="checkbox"/> Engineering <u>Wayne</u>	10/14					
<input type="checkbox"/> Geology						
<input checked="" type="checkbox"/> Soils <u>Henry</u>	10/14					
<input checked="" type="checkbox"/> Hydrology <u>Steve</u>	10/14					
<input checked="" type="checkbox"/> Bonding <u>Wayne</u>	10/14					
<input type="checkbox"/> AVS Check						

COORDINATED REVIEWS	DUE	DONE	DUE	DONE	DUE	DONE
<input type="checkbox"/> OSMRE						
<input type="checkbox"/> US Forest Service						
<input type="checkbox"/> Bureau of Land Management						
<input type="checkbox"/> US Fish and Wildlife Service						
<input type="checkbox"/> US National Parks Service						
<input type="checkbox"/> UT Environmental Quality						
<input type="checkbox"/> UT Water Resources						
<input type="checkbox"/> UT Water Rights						
<input type="checkbox"/> UT Wildlife Resources						
<input type="checkbox"/> UT State History						
<input type="checkbox"/> Other						

<input type="checkbox"/> Public Notice/Comment/Hearing Complete (If the permit change is a Significant Revision)	<input type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date. <input type="checkbox"/> Permit Change Denied.
<input type="checkbox"/> Copies of permit change marked and ready for MRP.	<input type="checkbox"/> Notice of <input type="checkbox"/> Approval <input type="checkbox"/> Denial to Permittee.
<input type="checkbox"/> Special Conditions/Stipulations written for approval.	<input type="checkbox"/> Copy of Approved Permit Change to File.
<input type="checkbox"/> TA and CHIA modified as required.	<input type="checkbox"/> Copy of Approved Permit Change to Permittee.
<input type="checkbox"/> Permit Change Approval Form ready for approval.	<input type="checkbox"/> Copies to Other Agencies and Price Field Office.



RECEIVED
 SEP
 DIV. OF OIL, GAS & MINING



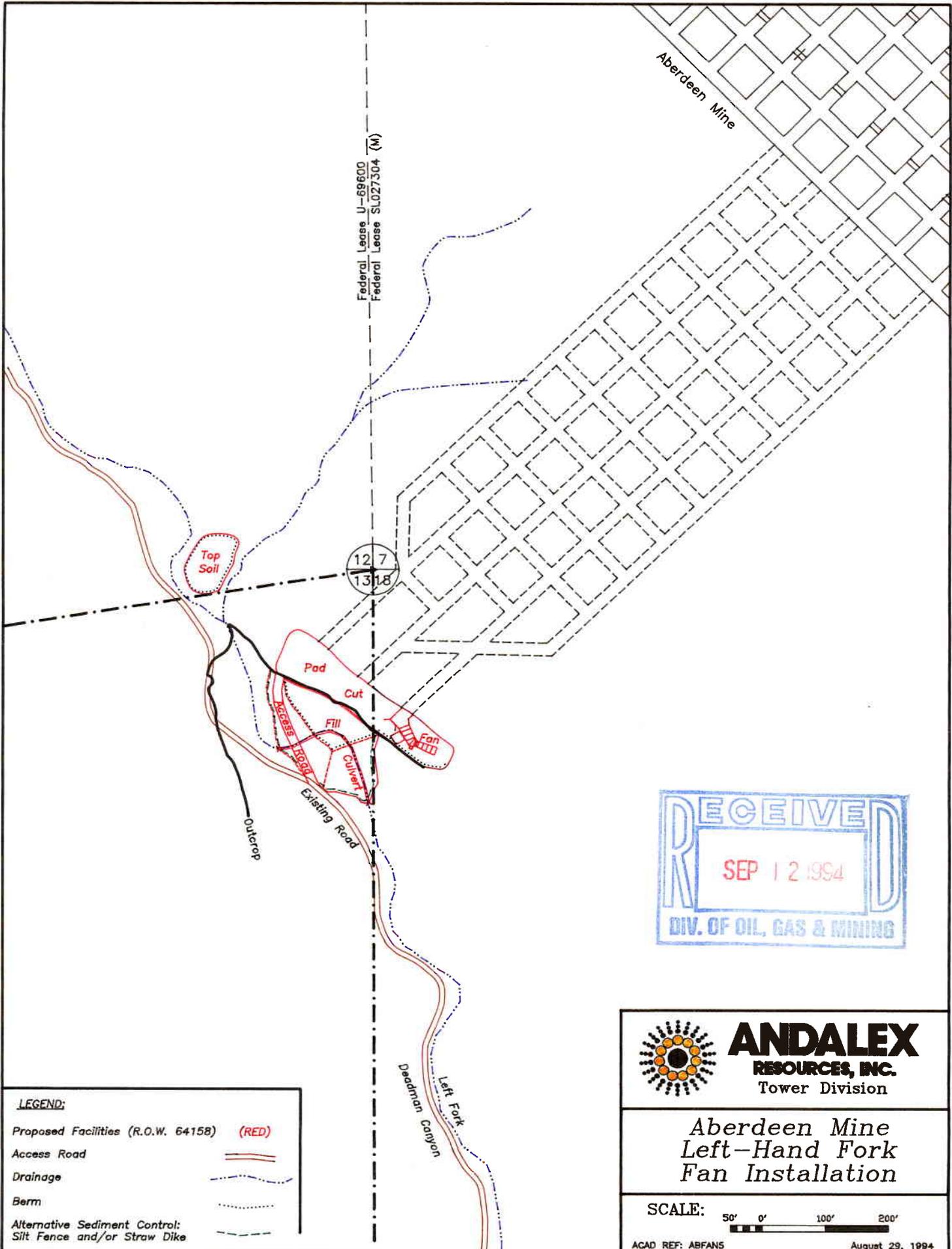
ANDALEX
 RESOURCES, INC.
 Tower Division

Aberdeen Mine
 Left-Hand Fork
 Fan Installation

SCALE: 50' 0' 100' 200'

ACAD REF: ABFANS August 29, 1994

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



RECEIVED
 SEP 12 1994
 DIV. OF OIL, GAS & MINING



ANDALEX
 RESOURCES, INC.
 Tower Division

Aberdeen Mine
 Left-Hand Fork
 Fan Installation

SCALE: 50' 0' 100' 200'

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 Drainage
 Berm
 Alternative Sediment Control:
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ANDALEX
RESOURCES, INC.
Tower Division

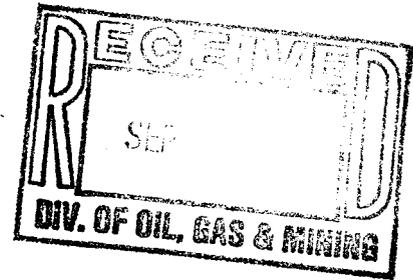
P.O. BOX 902
PRICE, UTAH 84501
PHONE (801) 637-5385
TELECOPIER (801) 637-8860

September 8, 1994

946

Was this filed?

State of Utah
Department of Natural Resources
Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203



Attn: Daron Haddock, Permit Supervisor

Re: ACT 007/019, Incidental Boundary Change, Remote Fan Installation

Dear Mr. Haddock: ^{#2}

Copy for Amendment file

Enclosed are three copies of plans for construction of a pad and remote ventilation fan installation in the left-hand fork of Deadman Canyon.

Included are cross-sections showing cut and fill volumes, as well as size and shape of the pad and location of the topsoil storage area to the north. This cut slope pad will be reclaimed to the original contour upon completion of mining as shown on the cross-section diagrams.

Attached are calculations by a registered professional engineer showing culvert size determinations for the initial drainage crossing, as well as at the fan location.

Soil Resources information for the proposed breakout will be submitted as soon as the report is completed. Topsoil will be removed and stored according to Andalex's approved MRP. This will include segregation and protection by means of earthen berms and revegetation.

State of Utah
Department of Natural Resources
Division of Oil, Gas & Mining
Attn: Daron Haddock, Permit Supervisor
September 8, 1994
Page Two

This area has been addressed in the CHIA performed on our recent UTU-69600 approval (AEP lease). All areas will be protected from runoff (sediment control) using straw dikes on all downstream slopes. The fan pad will drain to a portal.

The existing road will be upgraded only as necessary to access equipment for the construction and installation.

Andalex views this installation on its BLM right-of-way U-64158 as an incidental boundary change and we are anxious to begin construction as soon as possible.

Thank you for your assistance.

Sincerely,



Michael W. Glasson
Senior Geologist

Enclosures

a:\wp51\fin\public\glasson\007-019.fan

APPLICATION FOR PERMIT CHANGE

Title of Change:

Aberdeen Mine Fan Installation

Permit Number: ACT / 007 / 019

Mine: Centennial

Permittee: Andalex Resources, Inc.

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

Longwall mining in the Aberdeen Mine will require an increase in ventilation. It is proposed to accomplish this through the use of an additional fan. Timing is this construction year.

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	1. Change in the size of the Permit Area? <u>0.4</u> acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	2. Change in the size of the Disturbed Area? <u>0.4</u> acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	3. Will permit change include operations outside the Cumulative Hydrologic Impact Area?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	4. Will permit change include operations in hydrologic basins other than currently approved?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	6. Does permit change require or include public notice publication?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	7. Permit change as a result of a Violation? Violation #
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	8. Permit change as a result of a Division Order? D.O.#
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	9. Permit change as a result of other laws or regulations? Explain: MSHA Ventilation Requirements
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	10. Does permit change require or include ownership, control, right-of-entry, or compliance information?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	11. Does the permit change affect the surface landowner or change the post mining land use?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	12. Does permit change require or include collection and reporting of any baseline information?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	13. Could the permit change have any effect on wildlife or vegetation outside the current disturbed area?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	14. Does permit change require or include soil removal, storage or placement?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	15. Does permit change require or include vegetation monitoring, removal or revegetation activities?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	16. Does permit change require or include construction, modification, or removal of surface facilities?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	17. Does permit change require or include water monitoring, sediment or drainage control measures?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	18. Does permit change require or include certified designs, maps, or calculations?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	19. Does permit change require or include underground design or mine sequence and timing?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	20. Does permit change require or include subsidence control or monitoring?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	23. Is this permit change coal exploration activity <input type="checkbox"/> inside <input type="checkbox"/> outside of the permit area?

Attach 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.

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.

Michael W. Holman
Signed - Name - Position - Date

Subscribed and sworn to before me this 25th day of July, 1994
Jana K. O'Hearon
Notary Public
My Commission Expires: July 22, 1997
Attest: Utah
COUNTY OF _____



Notary Public
JANA K. O'HEARON
830 North 100 East
Price, Utah 84501
My Commission Expires
July 22, 1997
State of Utah

Received by Oil, Gas & Mining

RECEIVED

DIV. OF OIL, GAS & MINING

ASSIGNED PERMIT CHANGE NUMBER

Pinnacle and Aberdeen Mines. With the longwall expansion in the Aberdeen Mine a new fan installation will be required in the left hand fork of Deadman Canyon. (See Left Fork drawings.) Access to and handling and extraction of all coal will be through existing Pinnacle, Aberdeen, and Apex Mine facilities.

Overview and Summary of Project

Mining operations at the Pinnacle Mine began 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 late in 1982. Current mining activity is occurring in the Gilson Seam and Lower Sunnyside Seam. Mining commenced in the Aberdeen Seam in mid 1988. Mining commenced in the Centennial Seam in 1990. The coal is classified as High Volatile B bituminous in the Lower Sunnyside, Gilson and Centennial Seams and as High-volatile A bituminous in the Aberdeen Seam.

The proposed mine plan area is located approximately 10 miles north-northeast of Price, Utah in Carbon County in T13S and R11E (See Figure I-1 and Plate 1). With the addition of the Sunedco Lease the Graves Lease, and the AEP lease, the coal property contains approximately 5,063 acres. Two hundred acres are fee surface and coal leased from the Zion Security Corporation. Two hundred forty acres are fee surface and coal and are leased from the Sunedco Coal Company. The remaining 4,623 acres are federal leases consisting of SL-027304 (236 acres), SL-063058 (400 acres), U-010581 (1,842 acres), U-05067320 (acres), U-52341(120 acres), UTU-66060 (903 acres), and UTU-69600 (802 acres), and which includes lease modifications acquired in 1981. Please see Plate 4.

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 and culinary usage is supplied by wells that have been drilled.

Revised 10/21/94

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

Sec. 9: SE 1/4 NW 1/4
S 1/2 NE 1/4
NE 1/4 NE 1/4
N 1/2 SE 1/4 containing 240 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.

UTU-69600

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

Sec 1, SW $\frac{1}{4}$
Sec 12, lots 2-11, W $\frac{1}{2}$ W $\frac{1}{2}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$
As to all coal in the Centennial Seam only
801.48 acres.

The name and address of the lessor is American Electric Power Service Corporation, Fuel Supply Department, P.O. Box 700, Lancaster, OH 43130

This agreement was executed May 1, 1992.

BLM Right-of-Way U-62045

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

Sec. 18: SE1/4 NE1/4 NW1/4 containing 10 acres, more or less.

BLM Right-of-Way UTU-64158 (Left Fork Fan)

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, NE $\frac{1}{4}$ SW $\frac{1}{4}$ (portions of) containing 1.45 acres, more or less.

The lessor is the Department of the Interior, Bureau of Land Management, 324 South State Street, Salt Lake City, Utah 84111.

Private Land Easement

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

Sec. 18: A portion of NE1/4 NE1/4 SE1/4 NW1/4 containing 1.5 acres, more or less.

Revised 10/21/94

R645-301-210.

INTRODUCTION

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 as planimetered by Andalex staff is 32.34 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 32.34 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.

Storage

The topsoil storage areas 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, Plates 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 in Chapter IV

Revised 10/21/94

R645-301-230.

OPERATION PLAN

Topsoil Handling During Operations

Removal

The area from which topsoil has been removed is 32.34 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. Approximately 750 cubic yards of topsoil will be stored in the left hand fork of Deadman Canyon for use during reclamation of the left fork fan installation. (See Plate LF-1.)

Storage

The topsoil storage areas 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, Plates 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 in Chapter IV which show totals and deficiencies. Also see Section F in Chapter IV for information pertaining to top soil substitute.

The new substitute topsoil pile plan and profile along with the volumes is included in Volume II also.

The new substitute topsoil will be protected by the use of straw dikes and earthen berms.

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.

Revised 10/21/94

Vegetation Information

Introduction

Mountain-Brush, Desert Shrub, Pinion-Juniper Woodland, Sagebrush-Grass, Conifer-Aspen, and minor stream-side vegetative types cover the total mine plan area. Most of the area is covered by the Mountain-Brush type while the Pinion-Juniper Woodland type is predominant in the mine mouth area as well as the access routes and utility corridors; this area has been reseeded with a mixture as recommended by the U.S.D.A. S.C.S. (please see Soil Survey and Vegetation Inventory in Appendix M). Appendix M now also includes soils and vegetation information pertaining to the newly acquired AEP Lease. Because there will be no additional surface disturbance on the lease area, a First Order Survey is not deemed necessary.

Andalex has selected and marked three reference areas in the field for vegetation. The Division has reviewed and approved these reference areas. Areas chosen include all types of vegetation conditions such as drainage areas, shallow slopes and steep slopes. Andalex contacted the SCS to help evaluate the condition of these sites. Please see SCS letter in Appendix M. It should be noted that Andalex does have the benefit of a revegetation test plot located on one of the topsoil piles. The drainage area reference area is the most adaptable to the left fork fan installation.

The revegetation map now shows the acreages for the three range types. Shrub clumps make up 2.15 acres, drainage areas make up 15.02 acres and steep slopes make up 17.03 acres. Total disturbed area, including the Aberdeen Mine left fork fan is 33.84 acres.

Source of Data

Department of the Interior, 1979. Final Environmental Statement, Development of Coal Resources in Central Utah; Part 1 Regional Analysis; Part 2 Site Specific Analysis.

United States Department of Agriculture, Soil Conservation Service, May, 1980. Soil Survey and Interpretations, Vegetation Survey.

Centennial Coal Associates, May, 1976 Mining Application. Submitted to the United States Geologic Survey, Conservation Branch.

A.M.C.A. Coal Leasing, June, 1978 Mining and Reclamation Plan (Zion's fee). Submitted to the State of Utah, Department of Natural Resources, Division of Oil, Gas, and Mining.

Revised 10/21/94

development wastes (please see Part 0 in this chapter). Any underground development waste or excess spoil which was generated while putting in the Aberdeen portals, has been used as stock pile pad material at the Aberdeen Minesite. The volume of this material is minimal.

- 11) Plates 16 and 17 show the final reclamation contours and configuration of the surface for Phases I and II respectively.
- 12) Subsidence monitoring points are shown on Plate 25. An additional station was added to Plate 25 to cover pillar extraction on the new AEP Lease. Also new stations were added under the Graves and Hoffman Creek Leases. Water monitoring location are shown on Figure IV-11. Additional water monitoring will be added as station 12-1 in Alrad Canyon below the AEP lease.
- 13) There will be no facilities left on the permit area permanently with the exception of the roads through the right and left forks of Deadman Canyon. After the completion of underground mining, all facilities will be removed with the exception of one downstream sedimentation pond. This pond will be removed upon final reclamation.
 - c) Maps, plans, and cross sections required under
 - b) (5), (6), (10), and (11) have been prepared under the direction of, and certified by a registered professional engineer. Assistance has come from a registered land surveyor.
 - 1) Detailed maps, plans, and cross sections for our sediment ponds, Plates 11, 12, and 13 have been certified by a registered professional engineer.
 - 2) Andalex has not used any excess spoil or underground development waste maps or cross sections. A map depicting the location of non-coal waste storage is included as Plate 6. Please refer to Part 0 in this chapter.

R645-301-331.

MINIMIZING IMPACT AND SURFACE EROSION

Revegetation Plan

Revegetation

Revegetation will be accomplished by Andalex or under Andalex's direct supervision and under the recommendations of the regulatory authority (see Plates 19 and 20). Revised 10/21/94

**CULTURAL AND HISTORIC RESOURCES
INFORMATION****General Requirements**

Most of the maps previously submitted as part of the Mining and Reclamation Plan are applicable. Where necessary, original maps have been revised to indicate the newly acquired lease area and these revisions are included with this submittal as figures or as plates in Volume II.

All categories within this section have been addressed, primarily in Volume II of the MRP which contains most of the plates.

- a) Surface and subsurface ownership of lands contiguous to the permit area are shown on Plates 2 and 3. This information can also be found in Volume I, Chapter II, 782.13, part 1.
- b) The leases for which we have the legal right of entry are shown on Plate 4. This information is also in Chapter II of Volume I.
- c) Andalex has submitted a permit modification to include the new AEP Lease recently acquired. Also, a permit will be sought in 1994 for a new fan installation immediately adjacent to Andalex's leases in the left hand fork in Deadman Canyon.
- d) There are no buildings within 1,000 feet of the permit area except those used as part of the mining operation. They are shown on Plates 6 and 7.
- e) There are no surface or subsurface man-made features within, passing through or passing over the permit area except the powerline, telephone cables, culverts, and etc., installed for the operation of this mine. See Plate 6 for their locations.
- f) These reference areas are shown on Plate 9 as R-1, R-3 and R-4. They are each 200 feet square approximately.
- g) The only user of surface water within this immediate hydrologic area is Andalex (Refer to Figure 5, Appendix L, which shows additional water use on Emma Park in the form of stock watering). Water rights for this area are found in Appendix L Tables 1 and 5. The intake location for this water into the mine is located on Plate 6. Disturbed area runoff is collected in a culvert and taken directly into the mine. Andalex controls this water right. If a discharge were to occur from any sediment pond (this has yet to occur), it would discharge into the Deadman Canyon drainage (Plate 21) which is ephemeral.
- h) County Road 299 starts at highway 6 in Price and terminates at Andalex Resources' minesite (Plate 1). Revised 10/21/94

General Requirements

Most of the maps previously submitted as part of the Mining and Reclamation Plan are applicable. Where necessary, original maps have been revised to indicate the newly acquired lease area and these revisions are included with this submittal as figures or as plates in Volume II. An archaeological clearance for the left fork fan installation can be found in Appendix C.

All categories within this section have been addressed, primarily in Volume II of the MRP which contains most of the plates.

- a) Surface and subsurface ownership of lands contiguous to the permit area are shown on Plates 2 and 3. This information can also be found in Volume I, Chapter II, 782.13, part 1.
- b) The leases for which we have the legal right of entry are shown on Plate 4. This information is also in Chapter II of Volume I.
- c) Andalex has submitted a permit modification to include the new AEP Lease recently acquired. Also, a permit will be sought in 1994 for a new fan installation immediately adjacent to Andalex's leases in the left hand fork in Deadman Canyon.
- d) There are no buildings within 1,000 feet of the permit area except those used as part of the mining operation. They are shown on Plates 6 and 7.
- e) There are no surface or subsurface man-made features within, passing through or passing over the permit area except the powerline, telephone cables, culverts, and etc., installed for the operation of this mine. See Plate 6 for their locations.
- f) These reference areas are shown on Plate 9 as R-1, R-3 and R-4. They are each 200 feet square approximately.
- g) The only user of surface water within this immediate hydrologic area is Andalex (Refer to Figure 5, Appendix L, which shows additional water use on Emma Park in the form of stock watering). Water rights for this area are found in Appendix L Tables 1 and 5. The intake location for this water into the mine is located on Plate 6. Disturbed area runoff is collected in a culvert and taken directly into the mine. Andalex controls this water right. If a discharge were to occur from any sediment pond (this has yet to occur), it would discharge into the Deadman Canyon drainage (Plate 21) which is ephemeral.

Revised 10/21/94

- h) County Road 299 starts at highway 6 in Price and terminates at Andalex Resources' minesite (Plate 1).
- i) There are no public parks nor any cultural or historical sites eligible for listing in the National Register in or adjacent to the mine plan area.
- j) There is no land which is within the boundaries of any units of the National System of Trails or the Wild and Scenic Rivers System including study rivers.

R645-301-411.141. CULTURAL AND HISTORIC RESOURCES MAPS

N/A

R645-301-411.141.1 PUBLIC PARKS AND LOCATIONS OF ANY CULTURAL OR HISTORICAL RESOURCES

N/A

R645-301-411.141.2 CEMETERIES

There are no cemeteries or burial grounds in or within 100 feet of the permit area.

R645-301-411.141.3 NATIONAL SYSTEM OF TRAILS OR THE WILD AND SCENIC RIVERS SYSTEM

N/A

R645-301-411.142. COORDINATION WITH THE STATE HISTORIC PRESERVATION OFFICER (SHPO)

Appendix A

R645-301-411.142.1 PREVENTION OF ADVERSE IMPACTS

Appendix A

R645-301-411.142.2 VALID EXISTING RIGHTS OR JOINTS AGENCY APPROVAL

Appendix A
Revised 10/21/94

Barrier Pillars

A barrier pillar will be left between the bleeders and the longwall panels. A barrier will also be left wherever old mine workings are skirted such as the Olsen Mine on the east side of Deadman Canyon in the Gilson Seam.

Bleeder System

A bleeder system will be maintained and pillars left to provide for ventilation, eventually extending around all mined out areas.

Ventilation

The ventilation plan calls for a fan of sufficient capacity to provide air to each working section to control methane and dust; there has been small amounts only found to date in any of the old works or new faces. The longwall faces will be ventilated with a live brattice system consisting of a line curtains. The conveyor systems will be isolated from intake and return except in 2 entry gate systems when the belt will double as the intake. All ventilation requirements of the Coal Mine Health and Safety Act will be met. This ventilation plan will be strictly adhered to, in order to insure safety of all personnel. Please note that the Centennial Seam mining area is ventilated by the existing Pinnacle Mine fan system. The new left fork fan installation will provide additional required ventilation for the Aberdeen Mine longwall faces.

Roof Control

All Andalex Mines operate under an approved M.S.H.A. roof support plan which calls for bolting on five foot centers with a minimum 42" bolt length in our development entries. Roof control in the longwall faces will be accomplished using hydraulic shields. The roof in all four seams is a massive sandstone (60'+) and offers excellent support in itself. The old mine workings which were rehabilitated for the Pinnacle Mine main entries had stood unsupported for 40 years. This roof control plan will be strictly adhered to, in order to insure the safety of all personnel.

Explosives and Blasting

All blasting performed underground will conform to both state and federal regulations governing explosives and blasting in underground coal mines. The rock tunnels to the Centennial Seam were constructed by professional hard rock mining company.

All surface blasting activities necessary for present operations have been completed in compliance with sections 817.61 through

Revised 10/21/94

Regulations. Blasting consisted of portal highwall construction for purposes of stability. A powder magazine has been set up on one of the surface pads, located in a remote area. It is built to conform to all regulations, such as segregation, regarding such a structure (see plate 6). All blasting operations shall be conducted by experienced, trained, and competent persons who understand the hazards involved and who possess a valid certificate as required by Title 30 of the Code of Federal Regulations.

General Safety Measures

A great emphasis is put on assuring a safe mine operation and the mine and surface facilities will be operated within prudent standards to insure the health and safety of all employees. The facilities will be carefully inspected by company-trained safety engineers and state and federal mine inspectors.

The operation will abide by Utah State Coal Mine Regulations and the 1969 Federal Coal Mine Health and Safety Act. In addition, these regulations will be supplemented by a company safety policy. Various training programs will be utilized such as the following:

- Methane Measurements
- Roof and Rib Control
- Oxygen Deficiency Testing
- Ventilation
- First Aid
- Mine Rescue
- Mine Electrical Certification
- Self Rescue Training
- Use of Personal Protective Equipment
- Recognition of Electrical Hazards
- General Accident Prevention
- Mine Communications
- Job Safety Training

Many of the training programs will run continuously, such as those involving roof control and ventilation. Other programs are held annually with many oriented toward new employees.

Mine Development (Refer to Plates 26, 27, 28 and 29).

Room and Pillar

Room and pillar design will be employed in fringe areas surrounding the longwall panels as conditions allow.

Pillar Extraction

Once development in fringe areas is completed, pillar extraction will commence as conditions permit. Final pillar extraction will result in a total recovery rate of approximately 65 percent.

Revised 10/21/94

As the left hand fork is classified as a intermittent drainage, stream buffer zone markers will be placed within 100 feet of the drainage disallowing access except for the disturbed site.

As there are no perennial streams or a stream with a biological community on the permit area, buffer zone markers will not be necessary. The perimeters of all areas affected by surface operations and facilities are clearly marked. These signs and markers shall be maintained during all activities and retained and maintained until after the release of all bonds for the permit area.

R645-301-512.120. SURFACE FACILITIES AND OPERATIONS

See Volume II.

Support structures and buildings are shown on Plates 6 and 7 and LF-1.

Parking Areas

Parking areas have been covered with gravel and magnesium chloride and will be maintained. These are shown on Plate 6. The main office parking area is paved.

Storage Areas

There are several storage areas at the site. These include the Material Storage Area No. 1, Raw Coal Pile Area, Material Storage Area No. 2, and the Topsoil Storage Area. All areas are shown on Plate 6.

R645-301-512.130. SURFACE CONFIGURATIONS

See Volume II, Plates 6 and 7.

R645-301-512.140. HYDROLOGY

Introduction

Water quality monitoring stations will be set up at the wells as shown on Figure IV-11, and also at the sedimentation pond discharge structures.

Sewage System

The nature of the overburden in the area offers excellent drainage. As a result, a septic system with drain fields conforming to the state codes has been established to handle the waste water disposal from the bathhouse and office facilities. The drain fields are
Revised 10/21/94

It should be noted however, that the immediate "floor" below the seams is sandstone in the case of the Lower Sunnyside and Aberdeen; and beneath the Gilson, and Centennial, siltstone.

Pyritic Content (Laboratory Analyses)

Complete analyses of these strata are included in Appendix E.

Potential Alkalinity (Laboratory Analyses)

Complete analyses of these strata are included in Appendix E.

Clay Content (Laboratory Analyses)

Complete analyses of these strata are included in Appendix E.

R645-301-512.200. PLANS AND ENGINEERING DESIGNS

Existing Structures

All existing structures are situated on the Zion's fee land, on federal lease SL-027304, or on right-of-way UTU-62045 and are shown on Plate 6. There are no structures existing as part as Andalex's facility which were constructed prior to 1980. Originally it was anticipated that all buildings and structures were to be completed during the first five year permit term. Obviously this is not the case since the Aberdeen Mine has only recently been completely finished to this date. Plate 6 depicts the Aberdeen Mine with the surface facilities completed in early 1990. A new fan for the Aberdeen Mine will be constructed in the left fork of Deadman Canyon. Underground rock tunnels access the Centennial Seam. See 1.1, 2.1-1, 2.1-4.

Existing structures include the following:

Bathhouse (3)	14' x 60'
Mine Water Storage Tanks (3)	12' x 16'
Warehouse (1)	14' x 60'
Lamphouse (2)	40' x 40'
Main Substation	60' x 100'
Office Building	28' x 60'
Mine Fans (4)	88"
Portals (15)	6' x 20'
Culinary Water Tanks (3)	12' x 10'
Shop	80' x 120'

Revised 10/21/94

The Aberdeen Mine surface facilities will include one additional bathhouse, and one lamphouse.

Upon completion of mining activities, the portals will be sealed according to existing state and federal regulations and all buildings and structures not being utilized as part of the reclamation sequence, will be removed, according to the Reclamation Plan outlined in Part F of this Chapter.

Construction Schedule

All of the above structures have been completed. The earthwork for the Aberdeen Mine was completed in 1989. The surface facilities were in early 1990. Construction has been located and carried out so as to prevent and control erosion, siltation, water pollution, and damage to property. All facilities have been designed and constructed and will be maintained and used in a manner which prevents damage to wildlife and related environmental values. Any future construction will be conducted in a similar manner according to regulations regarding protection of the hydrologic system, etc. The rock tunnels for the Centennial Seam development were constructed in the spring of 1990 and completed late in 1990. As previously discussed this mining will require no new surface facilities except the left fork fan installation (1994).

Construction Methods

Major Equipment

The portal and building sites were leveled using dozers, trucks, and loaders. At the building sites, the topsoil was removed and transported to a nearby area for storage.

All surface pads have been graveled and all other disturbed areas (pond embankments, etc.) have been reseeded.

R645-301-512.210. EXCESS SPOIL

N/A

R645-301-512.220. DURABLE ROCK FILLS

N/A

Revised 10/21/94

TABLE IV-3C (Continued)
DISTURBED AREA CULVERT DESIGN

<u>STRUCTURE</u>	<u>CD-14</u>	<u>CD-15</u>	<u>CD-16</u>	<u>CD-17</u>	<u>CD-18</u>
10yr.-6hr. Event (in)	1.25	1.25	1.25	1.25	1.25
Manning's Number (n)	0.025	0.025	0.025	0.025	0.0025
Culvert Slope (%)	3.50	3.50	6.25	5.56	57.74
Peak Flow 10/6 (cfs)	1.35*	2.84**	4.65***	4.65***	0.29
Velocity 10/6 (fps)	3.51	4.20	5.90	5.65	6.79
Diam. Req'd. (ft.)	0.70	0.93	1.00	1.02	0.23
Diam. In Place (ft.)	1.50	1.50	2.00	2.00	1.50

- * Based on entire flow from DD-1.
- ** Based on entire flows from DD-2, DD-10 & DD-11
- *** Based on entire flow from DD-4.

Revised 10/21/94

Primary Road 11 (PR-11) - This is a very short access road which accesses the bath house pad from two directions; both from PR-1 and from PR-4. This road is approximately 12 feet wide and 150 feet long. It is a single lane road with a grade of 0% to 6%. This road is treated with magnesium chloride annually.

Ancillary Road 1 (AR-1) - This is an access road which leads from the south Aberdeen intake portal to the Aberdeen mine fan. It is a single lane road which has a surface of sandstone. The road is used primarily for access to the fan, water system and conveyor. This road is approximately 20 feet wide and 400 feet long. There is a steel deck bridge over the Aberdeen mine conveyor. The grade on this road ranges from 8% to 10%.

Ancillary Road 2 (AR-2) - This road leads from the upper Pinnacle Mine intake portals to the Pinnacle Mine fan. It is a single lane gravel surfaced road which has a steel deck bridge where the road crosses the Pinnacle Mine conveyor. Its primary use is to access the Pinnacle Mine fan. It is approximately 12 feet wide and 250 feet long. The grade on this road ranges from 0% to 12%.

Ancillary Road 3 (AR-3) - This road leads from PR-2 up to the Apex material storage area (Gun range). This is a single lane gravel surface road which is approximately 12 feet wide and 175 feet long. The grade on this road is on an average of 9%. It is treated with Magnesium Chloride annually. It is used primarily for access.

Ancillary Road 4 (AR-4) - This road is access from the upper Apex material storage area to the Powder Magazines. This road continues beyond the north end of our permit area but it becomes a private road beyond the permit area. This is a single lane dirt road which is approximately 12 feet wide and 150 feet long. The grade on this short stretch of road is 5% to 8%.

Ancillary Road 5 (AR-5) - This road is access from Carbon County Road 299 to the left hand fork installation. This existing road will be upgraded adequately for maintenance and emergency access only. It will be equipped with a locked gate. This is a single lane dirt road which is approximately 15 feet wide and 4000 feet long. There will be 3 or 4 locations specifically widened so that two vehicles may pass. The grade on this stretch of road ranges from 0% to 15%.

Andalex commits to repair roads damaged by a catastrophic event according to R645-301-527.240. According to R645-301-534.100 Andalex has located, designed, constructed, used and maintained Primary Roads so as to prevent or control damage to private and public property. Andalex has used non-acid or non-toxic forming materials in road surfacing. Roads have, at a minimum a static safety factor of 1.3 on embankments. Andalex has a schedule and plan to remove roads that will not be retained as part of the

the location of springs in the permit area and adjacent areas. This figure, along with Figures 5 and 6, depict the areal extent of the inventory.

- h) N/A
- i) Plate 6 shows the location of development waste stored in an area which was previously used as a sediment pond. Plate 6 now also shows the location of a new area above the Apex Mine which can be used for temporary and permanent storage of development waste such as sediment pond material. Also, please see Part O of Chapter IV. All dams and impoundments are shown on Plates 6 and 7, and detailed on Plates 11, 12, and 13. There are no other water treatment or air pollution control facilities on the permit area.
- j) There are no oil or gas wells within the permit area. Three water wells are shown on Plate 6. Well number 1 is 220 feet deep; number 2 is 100 feet deep, and number 3 is 120 feet deep.
- k) Plates 14 and 15 accurately depict the area currently affected by mining as well as the area to be affected. They show the slopes as they exist as well as after construction and upon final reclamation.

Operation Plan: Maps and Plans

- 1) Most of the maps and plans previously submitted as part of the approved Mining and Reclamation Plan, are applicable. Where necessary, the original maps have been revised to indicate the lease in Hoffman Creek and the revisions are included in this submittal in Volume II.

All necessary maps and plans to complete this section are found in Volume II of the submittal and also in the appendices of Volume I (please see table of contents following 784.23 in Chapter V). Specifically,

- a) Underground coal mining activities to be conducted and lands to be affected by surface facilities are shown on Plates 6, 29, 30, 31 and 41.
 - b-1) Buildings, utilities, and facilities are depicted on Plates 6 and Plate LF-1.
- 2) The area to be affected is shown on several plates, including 4, 5, 6, 29, 30, 31 and 41. These last four plates show the sequence of mining in the four seams over the five year term of the permit. Plate 30 has been revised to show immediate development in the Gilson Seam as soon as approval is

Revised 10/21/94

1. Single-lane, gravel or asphalt surfaced roads approximately 12 - 15' wide; and
2. Double-lane, either gravel or asphalt surfaced roads, approximately 26' wide.

Although all roads on site are not used for coal hauling, each primary road is constructed to the respective typical design and dimensions shown on Plate 35.

All roads are shown on Plate 6 and Plate 8. Specifics about the road are described individually and include road widths, gradients and surfaces. Drainage ditches and drainage structures for each road (disturbed area ditches or culverts) can be found in chapter IV in tables IV-2 through IV-8.

Because of the variance in road types, widths and lengths, the roads have been designated on Plate 6 with numbers (i.e. PR-1= Primary Road 1, Ar-1= Ancillary Road 1) to facilitate the description of each:

Primary Road 1 (PR-1) - This road connects Carbon County Road 199 to the two lane paved road which travels past the Aberdeen Mine facilities, past the office driveway and bath house drive ways and past the Pinnacle truck loadout. This is an asphalt surfaced road approximately 26 feet wide and 2700 feet long. The grade on PR-1 ranges from 4% to 8%. It is used for hauling coal and for men and material access to the mines.

Primary Road 2 (PR-2) - This road begins at the end of PR-1 and continues north past the shop/warehouse and ends at the eastern side of the Apex Mine stockpile. This is a two lane gravel surfaced road which is approximately 26 feet wide and 1400 feet long. It is treated annually with Magnesium Chloride. The grade on this stretch of road ranges from 5% to 9%. It is used for hauling coal and equipment as well as providing men and materials access to the mines.

Primary Road 3 (PR-3) - This road provides access to the Aberdeen Mine truck loadout. It is a single lane gravel surface road approximately 15 feet wide and 590 feet long. It is treated with Magnesium Chloride annually. The grade on this road ranges from 0% to 4%.

Primary Road 4 (PR-4) - This road provides access for the coal haul trucks to the Pinnacle Mine truck loadout. It is also crossed to access the bath house parking area. This is a single lane, paved surface road which is approximately 15 feet wide and 500 feet long. The grade on this loop ranges from 0% to 9%.

Primary Road 5 (PR-5) - This road provides access for the coal haul trucks coming off of PR-2 to the Apex Mine truck loadout. It

is a single lane gravel surfaced road approximately 15 feet wide and 425 feet in length. The grade on this road ranges from 0% to 7%. It is treated annually with Magnesium Chloride. The three truck loadout roads are also accessed by front-end loaders for the purpose of cleaning up occasional coal spills.

Primary Road 6 (PR-6) - This is an access road which leads to the main office parking area. It is a single lane, paved surface road which is approximately 15 feet wide and 600 feet long. The average grade of this road is 5% to 7%.

Primary Road 7 (PR-7) - This is an access road for mining equipment. It provides heavy equipment access to and from the Aberdeen Mine. It begins at the south inlet to pond C and it ends at the bath house parking area. It is a gravel surfaced road and is approximately 12 feet wide and 450 feet long. It has grades which range from 4% to 14%. Magnesium Chloride is applied annually.

Primary Road 8 (PR-8) - This road leads from the fuel storage area at the Pinnacle Mine facility to the oil storage area near the upper Pinnacle portals. This is a single lane, gravel surface road approximately 15 feet wide and 325 feet long. The grade on this road has a range of 9% to 11%. It is treated with Magnesium Chloride annually.

Primary Road 9 (PR-9) - This road leads from PR-2 and turns west over the top of the Apex Mine conveyor belt. The road leads to the Apex Mine material storage area, adjacent to the mine fan. This is a single lane gravel surfaced road which is approximately 15 feet wide and 200 feet long and includes a steel deck bridge over the mine conveyor. The grade on this road ranges between 0% and 8%, and the gravel is treated with Magnesium Chloride.

Primary Road 10 (PR-10) - This is an access road which leads from the upper Aberdeen Mine material storage area down to the Aberdeen Mine stockpile pad. This is a short stretch of road which is approximately 12 feet wide and 150 feet long. It is a single lane road with an average grade of 12% to 15%.

Primary Road 11 (PR-11) - This is a very short access road which accesses the bath house pad from two directions; both from PR-1 and from PR-4. This road is approximately 12 feet wide and 150 feet long. It is a single lane road with a grade of 0% to 6%. This road is treated with magnesium chloride annually.

Ancillary Road 1 (AR-1) - This is an access road which leads from the south Aberdeen intake portal to the Aberdeen mine fan. It is a single lane road which has a surface of sandstone. The road is used primarily for access to the fan, water system and conveyor. This road is approximately 20 feet wide and 400 feet long. There

Revised 10/21/94

is a steel deck bridge over the Aberdeen mine conveyor. The grade on this road ranges from 8% to 10%.

Ancillary Road 2 (AR-2) - This road leads from the upper Pinnacle Mine intake portals to the Pinnacle Mine fan. It is a single lane gravel surfaced road which has a steel deck bridge where the road crosses the Pinnacle Mine conveyor. Its primary use is to access the Pinnacle Mine fan. It is approximately 12 feet wide and 250 feet long. The grade on this road ranges from 0% to 12%.

Ancillary Road 3 (AR-3) - This road leads from PR-2 up to the Apex material storage area (Gun range). This is a single lane gravel surface road which is approximately 12 feet wide and 175 feet long. The grade on this road is on an average of 9%. It is treated with Magnesium Chloride annually. It is used primarily for access.

Ancillary Road 4 (AR-4) - This road is access from the upper Apex material storage area to the Powder Magazines. This road continues beyond the north end of our permit area but it becomes a private road beyond the permit area. This is a single lane dirt road which is approximately 12 feet wide and 150 feet long. The grade on this short stretch of road is 5% to 8%.

Ancillary Road 5 (AR-5) - This road is access from Carbon County Road 299 to the left hand fork installation. This existing road will be upgraded adequately for maintenance and emergency access only. It will be equipped with a locked gate. This is a single lane dirt road which is approximately 15 feet wide and 4000 feet long. There will be 3 or 4 locations specifically widened so that two vehicles may pass. The grade on this stretch of road ranges from 0% to 15%.

Andalex commits to repair roads damaged by a catastrophic event according to R645-301-527.240. According to R645-301-534.100 Andalex has located, designed, constructed, used and maintained Primary Roads so as to prevent or control damage to private and public property. Andalex has used non-acid or non-toxic forming materials in road surfacing. Roads have, at a minimum a static safety factor of 1.3 on embankments. Andalex has a schedule and plan to remove roads that will not be retained as part of the approved post mining land use (see chapter IV, section F.) Ancillary roads will be travelled only by light vehicles for routine access. Occasionally, they will be travelled by larger equipment but probably only in emergency or repair situations, as 2 of the 4 Ancillary Roads lead to fan installations. All Primary Roads will meet the requirements of R645-301-358, R645-301.527.100, R645-301-527.230, R645-301-534.100, R645-301-534.200, R645-301-542.600 and R645-301-762. Primary Roads will be located in so far as practical on the most stable available surfaces. The roads are surfaced with rock, gravel or asphalt according to R645-301-534.320. They will be routinely maintained, and have culverts which are designed and installed as necessary according to the requirements of R645-301-534.340.

Revised 10/21/94

Aberdeen Mine

Restoration to the pre-mining land use will require:

	<u>Job Description</u>	<u>Equipment</u>	<u>Hours</u>	<u>Cost</u>
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
3)	a. Seal Portals, fill cut slope	Loader	8	\$ 640
	b. Remove culvert	Backhoe	25	2,000
	c. Contour stream channel	D-7	16	1,280
	d. Contour slope	D-7	16	1,280
	e. Compact	Loader	8	640
	f. Replace topsoil	Loader	16	1,200
	g. Revegetation	Drill	2	100
	h. Stake slope	Engineer	8	400
	Total Stockpile Area:			\$ 7,540

Revised 10/21/94

Office Site

Restoration to pre-mining land use will require:

<u>Job Description</u>	<u>Equipment</u>	<u>Hours</u>	<u>Cost</u>
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:			<u>\$ 5,610</u>
2. Seal Well (1)			
a. Fill, cement		4	\$ 400
Total Well:			<u>\$ 400</u>
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:			<u>\$ 990</u>
<u>Total Projected Reclamation Costs:</u>			
Lower Sunnyside Mine			\$ 29,410
Gilson (Pinnacle) Mine			43,420
Aberdeen Mine			27,200
Office Site			7,000
Monitoring (5 years)			10,000
Total Reclamation, 1987 \$			<u>\$117,490</u>
Contingency 10%			<u>11,750</u>
Grand Total*			<u>\$129,240</u>

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

Revised 10/21/94

As Constructed Earthwork Volume (Aberdeen Mine and Left Fork Fan)

Cut	72,406 yds. ³
Fill	76,925 yds. ³
Topsoil	4,250 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)	
76,925 + 7693 =	84,618 @ \$2.25
112,969 + 11,297 =	124,266 @ \$2.25
	208,884 @ \$2.25 = \$469,989
Topsoil Hauling and Placement	
22,750 + 2275 =	25,025 @ \$5.71 = \$142,893
Compaction	
158,294 @ \$.21 =	\$33,242
Total Earthwork: \$646,124	

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 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.

Revised 10/21/94

Primary Road 10 (PR-10) - This is an access road which leads from the upper Aberdeen Mine material storage area down to the Aberdeen Mine stockpile pad. This is a short stretch of road which is approximately 12 feet wide and 150 feet long. It is a single lane road with an average grade of 12% to 15%.

Primary Road 11 (PR-11) - This is a very short access road which accesses the bath house pad from two directions; both from PR-1 and from PR-4. This road is approximately 12 feet wide and 150 feet long. It is a single lane road with a grade of 0% to 6%. This road is treated with magnesium chloride annually.

Ancillary Road 1 (AR-1) - This is an access road which leads from the south Aberdeen intake portal to the Aberdeen mine fan. It is a single lane road which has a surface of sandstone. The road is used primarily for access to the fan, water system and conveyor. This road is approximately 20 feet wide and 400 feet long. There is a steel deck bridge over the Aberdeen mine conveyor. The grade on this road ranges from 8% to 10%.

Ancillary Road 2 (AR-2) - This road leads from the upper Pinnacle Mine intake portals to the Pinnacle Mine fan. It is a single lane gravel surfaced road which has a steel deck bridge where the road crosses the Pinnacle Mine conveyor. Its primary use is to access the Pinnacle Mine fan. It is approximately 12 feet wide and 250 feet long. The grade on this road ranges from 0% to 12%.

Ancillary Road 3 (AR-3) - This road leads from PR-2 up to the Apex material storage area (Gun range). This is a single lane gravel surface road which is approximately 12 feet wide and 175 feet long. The grade on this road is on an average of 9%. It is treated with Magnesium Chloride annually. It is used primarily for access.

Ancillary Road 4 (AR-4) - This road is access from the upper Apex material storage area to the Powder Magazines. This road continues beyond the north end of our permit area but it becomes a private road beyond the permit area. This is a single lane dirt road which is approximately 12 feet wide and 150 feet long. The grade on this short stretch of road is 5% to 8%.

Ancillary Road 5 (AR-5) - This road is access from Carbon County Road 299 to the left hand fork installation. This existing road will be upgraded adequately for maintenance and emergency access only. It will be equipped with a locked gate. This is a single lane dirt road which is approximately 15 feet wide and 4000 feet long. There will be 3 or 4 locations specifically widened so that two vehicles may pass. The grade on this stretch of road ranges from 0% to 15%.

Andalex commits to repair roads damaged by a catastrophic event according to R645-301-527.240. According to R645-301-534.100
Revised 10/21/94

Andalex has located, designed, constructed, used and maintained Primary Roads so as to prevent or control damage to private and public property. Andalex has used non-acid or non-toxic forming materials in road surfacing. Roads have, at a minimum a static safety factor of 1.3 on embankments. Andalex has a schedule and plan to remove roads that will not be retained as part of the approved post mining land use (see chapter IV, section F.) Ancillary roads will be travelled only by light vehicles for routine access. Occasionally, they will be travelled by larger equipment but probably only in emergency or repair situations, as 2 of the 4 Ancillary Roads lead to fan installations. All Primary Roads will meet the requirements of R645-301-358, R645-301.527.100, R645-301-527.230, R645-301-534.100, R645-301-534.200, R645-301-542.600 and R645-301-762. Primary Roads will be located in so far as practical on the most stable available surfaces. The roads are surfaced with rock, gravel or asphalt according to R645-301-534.320. They will be routinely maintained, and have culverts which are designed and installed as necessary according to the requirements of R645-301-534.340.

Railroad

There are no existing or proposed railroad spurs on the property.

Other Transportation Facilities

The conveyor structures at the minesite are very standard cross member, bent designs. The Pinnacle conveyor is 180 feet in length and uses a 42" conveyor belt. It is covered with galvanized corrugated sheeting. The Pinnacle Truck Loadout is an under pile gravity feed reclaim system in 8 foot diameter sectioned steel tunnel for 90 feet and surfaces on the typical bent, steel structure for an additional 110 feet. The Apex truck loadout is identical to Pinnacle. The mine conveyor is also the same bent/cross member design with a 42" conveyor; however, it is 250 feet in length. The Aberdeen facility is equipped with conveyor facilities similar to that of Pinnacle with only slight variations in exact length anticipated or possible. These facilities will be completed in early 1990.

Transportation facilities such as roads have been addressed. The roads, Class II and I are to be removed upon cessation of mining by simple regrading and re-establishment of contours, unless surface owners request access through the mine area might remain.

Protection of the environment through the use of these facilities is achieved by speed controls (20 mph minesite). The conveyor structures as such do not impose environmental problems. Public safety obviously is a requirement of law including MSHA but also public safety is a requirement of Andalex Resources. Also the minesite is not frequented by any public outside of normal, weekly business hours.

Revised 10/21/94

R645-301-542.610. CLOSURE

See R645-301-240.

R645-301-542.620. REMOVAL OF BRIDGES AND CULVERTS

Post Mining Hydrology

Upon completion of mining activities, and following removal of surface structures, the earthwork portion of the reclamation plan will begin as described in Part F, Section 3. The hydrologic portion of reclamation will take place in two phases including the left fork fan installation:

1. The main and side drainage channels will be restored as shown in the Sedimentation and Drainage Control Plan, and on Plate 16. Loose rock check dams will be placed at each side drainage entrance onto the reclaimed area, and at approximately 500' intervals along the restored main channel RC-1. (Typical sections of the loose rock check dams are shown in the Sedimentation and Drainage Control Plan).

All disturbed diversions and sediment ponds "B" and "C" will also be removed at this time. Sediment Pond "E" will be enlarged, and the entire drainage above will flow into Pond "E-PM" through the restored channel RC-1.

2. Once revegetation and water quality standards are met, Pond "E-PM" will be removed, and the area reclaimed.

Surface water monitoring will continue during this time as described in Sections 3.1-1.1 and 3.1-1.2. Please see Figure IV-11.

R645-301-542.630. TOPSOIL REPLACEMENT AND REVEGETATION

Backfilling, Grading, and Soil Replacement and Stabilization

All disturbed areas will be backfilled and graded to as near as possible the approximate original contour, and to the most moderate slope possible. Slopes shall not exceed the angle of repose or such lessor slopes as required by the regulatory authority to maintain stability. Fill material will be compacted to assure stability.

Andalex has had a slope stability study performed on a fill pad with a slope greater than 2h:1v and it was determined, even prior to compaction, that the fill had an adequate safety factor. Refer to Appendix K for this study done at the Pinnacle Mine. Andalex Revised 10/21/94

R645-301-724.200. SURFACE WATER INFORMATION

Appendix L

R645-301-724.300. GEOLOGIC INFORMATION

Appendix L

R645-301-724.310. PROBABLE HYDROLOGIC CONSEQUENCES

Appendix L

R645-301-724.320. RECLAIMABILITY

Post Mining Hydrology

Upon completion of mining activities, and following removal of surface structures, the earthwork portion of the reclamation plan will begin as described in Part F, Section 3. The hydrologic portion of reclamation will take place in two phases including the left hand fork fan installation:

1. The main and side drainage channels will be restored as shown in the Sedimentation and Drainage Control Plan, and on Plate 16. Loose rock check dams will be placed at each side drainage entrance onto the reclaimed area, and at approximately 500' intervals along the restored main channel RC-1. (Typical sections of the loose rock check dams are shown in the Sedimentation and Drainage Control Plan).

All disturbed diversions and sediment ponds "B" and "C" will also be removed at this time. Sediment Pond "E" will be enlarged, and the entire drainage above will flow into Pond "E-PM" through the restored channel RC-1.

2. Once revegetation and water quality standards are met, Pond "E-PM" will be removed, and the area reclaimed.

Surface water monitoring will continue during this time as described in Sections 3.1-1.1 and 3.1-1.2. Please see Figure IV-11.

Revised 10/21/94

Cost of Reclamation

Detailed Estimate

A detailed cost projection follows and includes reclamation of the left hand fork fan installation

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.

Revised 10/21/94

Aberdeen Mine

Restoration to the pre-mining land use will require:

	<u>Job Description</u>	<u>Equipment</u>	<u>Hours</u>	<u>Cost</u>
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:			<u>\$ 6,600</u>
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:			<u>\$13,060</u>
3)	a. Seal Portals, fill cut slope	Loader	8	\$ 640
	b. Remove culvert	Backhoe	25	2,000
	c. Contour stream channel	D-7	16	1,280
	d. Contour slope	D-7	16	1,280
	e. Compact	Loader	8	640
	f. Replace topsoil	Loader	16	1,200
	g. Revegetation	Drill	2	100
	h. Stake slope	Engineer	8	400
	Total Stockpile Area:			<u>\$ 7,540</u>

Revised 10/21/94

Office Site

Restoration to pre-mining land use will require:

	<u>Job Description</u>	<u>Equipment</u>	<u>Hours</u>	<u>Cost</u>
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:			<u>\$ 5,610</u>
2.	Seal Well (1)		4	\$ 400
	a. Fill, cement			<u>\$ 400</u>
	Total Well:			
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:			<u>\$ 990</u>

Total Projected Reclamation Costs:

Lower Sunnyside Mine	\$ 29,410
Gilson (Pinnacle) Mine	43,420
Aberdeen Mine	27,200
Office Site	7,000
Monitoring (5 years)	10,000
Total Reclamation, 1987 \$	<u>\$117,490</u>
Contingency 10%	11,750
Grand Total*	<u>\$129,240</u>

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

Revised 10/21/94

As Constructed Earthwork Volume (Aberdeen Mine and Left Fork Fan)

Cut	72,406 yds. ³
Fill	76,925 yds. ³
Topsoil	4,250 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)	
76,925 + 7693 =	84,618 @ \$2.25
112,969 + 11,297 =	124,266 @ \$2.25
	208,884 @ \$2.25 = \$469,989
Topsoil Hauling and Placement	
22,750 + 2275 =	25,025 @ \$5.71 = \$142,893
Compaction	
158,294 @ \$.21 =	\$33,242
Total Earthwork: \$646,124	

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 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.

Revised 10/21/94



BLACKHAWK ENGINEERING, CO.

Rt. 1, Box 146-H5 - Helper, Utah 84526 - Telephone (801) 637-2422

To: Mike Glasson
From: Dan Guy
Subject: Culvert Sizing for Left Fork of Deadman Canyon
Date: September 9, 1994

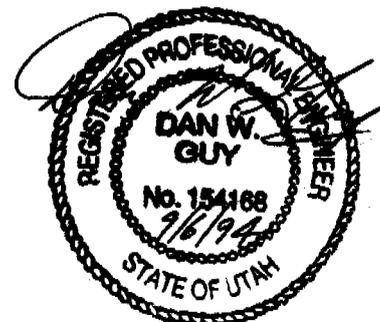
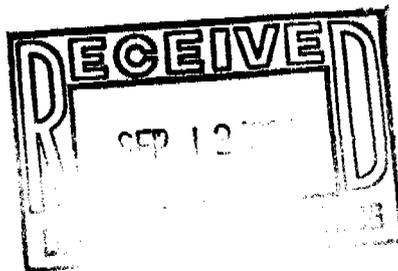
Per your request, I have run out some calculations to size the proposed upper and main canyon culverts for the Left Fork of Deadman Canyon.

The following parameters were used in the calculations:

<u>Location</u>	<u>Main Canyon Culvert</u>	<u>Upper Canyon Culvert</u>
Area	2075.35 ac.	897.85 ac.
Runoff CN	70	70
Rainfall 10/24	1.82"	1.82"
Rainfall 100/6	1.91"	1.91"
Hydraulic Length	12,000 ft.	8,400 ft.
Slope	20%	20%
Culvert Slope	5%	5%
Flow (10/24)	39.81 cfs	19.89 cfs
Flow (100/6)	73.91 cfs	35.02 cfs
Req'd Diam. (10/24)	2.34 ft.	1.80 ft.
Req'd Diam. (100/6)	2.95 ft.	2.23 ft.
Recommended Diameter	4.00 ft.	3.50 ft.

All calculations were based on methods and formulas described in the permit. It should be noted that the permit does allow the use of a runoff curve number of 65 for undisturbed diversions and culverts; however, the more conservative CN of 70 was used for these calculations for design purposes.

Based on the above, I would recommend a minimum culvert size of 48" diameter for the main canyon and a 42" diameter for the upper canyon (fan pad area). This allows for a full 1' + additional diameter beyond that required by the calculations. These sizes will be more than adequate to carry the calculated runoff from a 100 year-6 hour event or a 10 year-24 hour event.



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: MAIN CANYON CULVERT

Comment: BASED ON CN=70 (10/24)

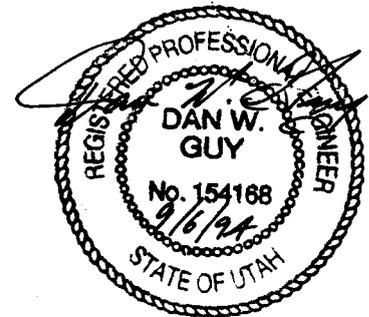
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	39.81 cfs

Computed Results:

Full Flow Diameter.....	2.34 ft
Full Flow Depth.....	2.34 ft
Velocity.....	9.29 fps
Flow Area.....	4.29 sf
Critical Depth....	2.11 ft
Critical Slope....	0.0439 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	39.81 cfs
QMAX @.94D.....	42.82 cfs
Froude Number.....	FULL



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: MAIN CANYON CULVERT

Comment: BASED ON CN=70 (100/6)

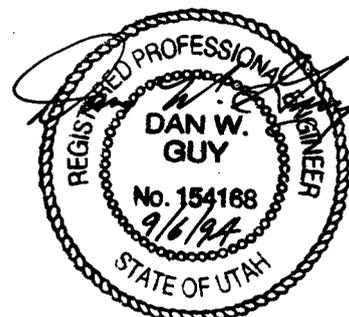
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	73.91 cfs

Computed Results:

Full Flow Diameter.....	2.95 ft
Full Flow Depth.....	2.95 ft
Velocity.....	10.84 fps
Flow Area.....	6.82 sf
Critical Depth....	2.70 ft
Critical Slope....	0.0435 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	73.91 cfs
QMAX @.94D.....	79.51 cfs
Froude Number.....	FULL



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: UPPER CANYON CULVERT

Comment: BASED ON CN=70 (10/24)

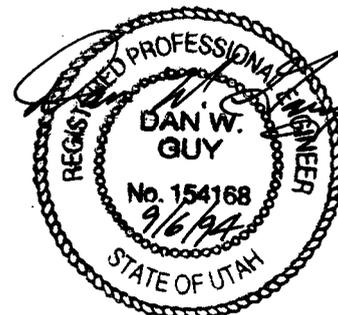
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	19.89 cfs

Computed Results:

Full Flow Diameter.....	1.80 ft
Full Flow Depth.....	1.80 ft
Velocity.....	7.81 fps
Flow Area.....	2.55 sf
Critical Depth....	1.61 ft
Critical Slope....	0.0444 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	19.89 cfs
QMAX @.94D.....	21.40 cfs
Froude Number.....	FULL



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: UPPER CANYON CULVERT

Comment: BASED ON CN=70 (100/6)

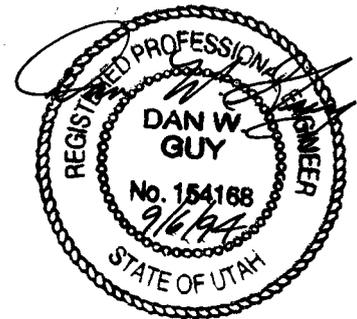
Solve For Full Flow Diameter

Given Input Data:

Slope.....	0.0500 ft/ft
Manning's n.....	0.025
Discharge.....	35.02 cfs

Computed Results:

Full Flow Diameter.....	2.23 ft
Full Flow Depth.....	2.23 ft
Velocity.....	8.99 fps
Flow Area.....	3.89 sf
Critical Depth....	2.01 ft
Critical Slope....	0.0439 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	35.02 cfs
QMAX @.94D.....	37.67 cfs
Froude Number.....	FULL



PERMIT CHANGE TRACKING FORM

DATE RECEIVED	9/12/94	PERMIT NUMBER	ACT/007/019
Title of Proposal:	Ibc, Remote	PERMIT CHANGE #	946
Description:	Fan Installation	PERMITTEE	Judalex
		MINE NAME	Centennial

	DATE DUE	DATE DONE	RESULT
<input type="checkbox"/> 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION			<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED
<input type="checkbox"/> Notice of Review Status of proposed permit change sent to the Permittee.			Permit Change Classification <input type="checkbox"/> Significant Permit Revision <input type="checkbox"/> Permit Amendment <input type="checkbox"/> Incidental Boundary Change
<input type="checkbox"/> Request additional review copies prior to Division/Other Agency review.			
<input type="checkbox"/> Notice of Approval of Publication. (If change is a Significant Revision.)			
<input type="checkbox"/> Notice of request to modify proposed permit change prior to approval.			

REVIEW TRACKING	INITIAL REVIEW		MODIFIED REVIEW		FINAL REVIEW AND FINDINGS	
DOGM REVIEWER	DUE	DONE	DUE	DONE	DUE	DONE
<input checked="" type="checkbox"/> Administrative <u>Paul</u>	10/14					
<input checked="" type="checkbox"/> Biology <u>Paul</u>	10/14					
<input checked="" type="checkbox"/> Engineering <u>Wayne</u>	10/14					
<input type="checkbox"/> Geology						
<input checked="" type="checkbox"/> Soils <u>Henry</u>	10/14					
<input checked="" type="checkbox"/> Hydrology <u>Steve</u>	10/14	10/4				
<input checked="" type="checkbox"/> Bonding <u>Wayne</u>	10/14					
<input type="checkbox"/> AVS Check						

COORDINATED REVIEWS	DUE	DONE	DUE	DONE	DUE	DONE
<input type="checkbox"/> OSMRE						
<input type="checkbox"/> US Forest Service						
<input type="checkbox"/> Bureau of Land Management						
<input type="checkbox"/> US Fish and Wildlife Service						
<input type="checkbox"/> US National Parks Service						
<input type="checkbox"/> UT Environmental Quality						
<input type="checkbox"/> UT Water Resources						
<input type="checkbox"/> UT Water Rights						
<input type="checkbox"/> UT Wildlife Resources						
<input type="checkbox"/> UT State History						
<input type="checkbox"/> Other						

<input type="checkbox"/> Public Notice/Comment/Hearing Complete (If the permit change is a Significant Revision)	<input type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date. <input type="checkbox"/> Permit Change Denied.
<input type="checkbox"/> Copies of permit change marked and ready for MRP.	<input type="checkbox"/> Notice of <input type="checkbox"/> Approval <input type="checkbox"/> Denial to Permittee.
<input type="checkbox"/> Special Conditions/Stipulations written for approval.	<input type="checkbox"/> Copy of Approved Permit Change to File.
<input type="checkbox"/> TA and CHIA modified as required.	<input type="checkbox"/> Copy of Approved Permit Change to Permittee.
<input type="checkbox"/> Permit Change Approval Form ready for approval.	<input type="checkbox"/> Copies to Other Agencies and Price Field Office.



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
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Ted Stewart
Executive Director
James W. Carter
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801-538-5319 (TDD)

November 3, 1994

TO: Daron Haddock, Permit Supervisor
FROM: Paul Baker, Reclamation Biologist *PAB*
RE: Draft Review, Fan Installation, Centennial Project, Andalex Resources, Inc.,
ACT/007/019, Working File, Carbon County, Utah

SYNOPSIS

In August, the Division received a reformatted mining and reclamation plan from Andalex for the Centennial Project. It is understood that this plan does not contain changes from the current plan, so it was used in this review.

On September 12, 1994, the Division received a proposal from Andalex Resources to develop a fan portal in the Left Fork of Deadman Canyon. Additional information was received October 24, 1994. The proposal includes a copy of the BLM right-of-way, a general description of vegetation in the area, and the results of an archaeological survey. The current mining and reclamation plan already includes wildlife information.

A small portion of the access road crosses State land, and another part crosses private land. Andalex does not appear to have obtained right-of-entry for either of these portions of the road.

Although the BLM right-of-way contains stipulations for wildlife protection and although the consultant gave reclamation recommendations, the plan does not include any commitments for the operation plan or a definitive reclamation plan.

Andalex is anxious to begin the project this year, and construction must either be completed by December 1 or postponed until July 15. The commitments recommended in this review should not be difficult for Andalex to include in the plan. To allow construction within the required time frame, conditional approval is recommended.

ANALYSIS

R645-301-114

Right of Entry

Analysis



The submittal includes a copy of a right-of-way grant/temporary use permit from the Bureau of Land Management. The right-of-way is for an access road 16 feet wide and 3000 feet long, a pad site 70 feet wide and 250 feet long, and two coal tunnels.

Andalex proposes to place its topsoil pile within the current permit area. The fan portal itself would also be in the current permit area; only two entries would be in the right-of-way.

The present mining and reclamation plan quotes the federal leases as saying, "The lessor. . . grants and leases to the lessee. . . the right to construct all works, buildings, structures, equipment, and appliances which may be necessary for the mining and preparation of the coal for market. . .".

Based on the information in the mining and reclamation plan and in this submittal, Andalex has secured necessary right of entry to use the portions of the road in the Left Fork of Deadman Canyon on Bureau of Land Management lands and to construct the fan portal and associated pad and topsoil pile. Page 3 of the revised mining and reclamation plan references this agreement.

A small portion of the access road at the intersection with the County road crosses State lands. The State owns the SW $\frac{1}{4}$ of Section 18, Township 13 S., Range 11 E. Interestingly, the Bureau of Land Management right-of-way includes the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 18 even though the land is apparently not under their control. Andalex needs to obtain right-of-entry for the portion of the road in Section 18 that is on State land.

Also in Section 18, Gladys Artman owns the SE $\frac{1}{4}$ NW $\frac{1}{4}$. The amendment includes no right-of-entry information for the portion of the road that crosses this land.

Findings

Andalex needs to obtain right-of-entry for the portion of the road in Section 18, Township 13 S., Range 11 E., that is on State and private land.

R645-301-115

Unsuitability Criteria

Analysis

The material received in the submittal does not address this issue.

According to information from the Bureau of Land Management, the existing road is not considered a public road in either the county or BLM transportation plan, and the BLM

does not spend money to maintain it. Therefore, the facilities proposed to be permitted are not within 100 feet of a public road.

Andalex is proposing that the access road be permitted as an ancillary road. The intersection of a permitted road with a public road is not considered mining and reclamation operations for which the Division needs to provide an opportunity for a public hearing. However, Andalex needs to discuss their proposed activities with Carbon County officials because there are potential safety and other factors that the County might want to consider. These issues are not within the scope of this regulation.

Findings

Andalex does not need to include additional information in this section of the mining and reclamation plan to comply with this regulation.

R645-301-320 Vegetation and Wildlife Information

Analysis

The submittal includes a soil survey report that includes general descriptions of the vegetation. Vegetation descriptions are correlated with range site categories. Range sites in the area include Upland Stony Loam (Pinyon-Juniper) of the Cabba family soils and the Datino soils, and Mountain Stony Loam (Oak) of the Brycan soils. Predominant species include Gambel oak, salina wild rye, big sage, low gray sage, Utah juniper, and pinyon. Vegetation in the Brycan soils areas is almost exclusively Gambel oak.

The soils and vegetation in this area are very similar to those in the main mine area. Because less than one acre will be disturbed and because the vegetation is similar to that in the Right Fork of Deadman Canyon, it is not necessary to establish a new reference area, and more detailed general vegetation information is not needed.

The current plan also includes wildlife information about this area. A golden eagle nest is in the cliffs above the proposed fan portal. This nest has been very productive in the past although it was not active in 1994.

The lower part of the access road is within critical deer winter range, and part of the proposed disturbance is in high priority elk winter range.

The Book Cliffs provide habitat for a candidate threatened or endangered species, canyon sweetvetch (*Hedysarum occidentale* var. *canone*). Although this species has no legal protection except under Bureau of Land Management regulations, it should be avoided if

possible. It is understood that Andalex hired a person to survey for this plant and that it was not found, but this information needs to be in the mining and reclamation plan. Also needed with the report would be other information required by R645-301-130 for technical reporting.

Findings

The plan needs to include information about whether canyon sweetvetch (*Hedysarum occidentale* var. *canone*) occurs in the area of the proposed disturbance.

R645-301-330

Operation Plan

Analysis

In this section, the proposal includes a statement that the road through the Left and Right Forks of Deadman Canyon will be left permanently after reclamation.

The current mining and reclamation plan contains a wildlife report from the Division of Wildlife Resources that includes some wildlife protection recommendations. Among these are statements that deer and elk winter ranges need to be protected from man's disturbance when the animals are present. The report also says that active golden eagle nests are extremely sensitive to man's disturbance within a one-half kilometer radius between April 15 and July 15.

The Bureau of Land Management right-of-way contains stipulations that are more specific and in line with current recommendations. Andalex should commit to follow the requirements of these stipulations. They are:

1. Andalex needs to commit to no construction activities within one-half mile of the golden eagle nest during the nesting season, February 15 to July 15. In places that are both within line-of-sight and one-half mile of the nest, there should also be no new road construction.
2. There should be no construction activities from December 1 to April 15 to minimize disturbance to wintering elk and deer. If it is necessary to do construction during this period, some flexibility may be allowed but would need to be coordinated with the Bureau of Land Management, the State Division of Wildlife Resources, and the Division.
3. Except for snow removal, all routine maintenance should be done from within the mine from December 1 to July 1.

Bill Bates of the Division of Wildlife Resources said in a telephone conversation October 31, 1994, that most deer have already moved to lower elevations this year. Therefore, although Andalex must not disturb the site after December 1, deer and elk may already be in the area. It is important that construction be completed as soon as possible and that employees not harass any animals.

Assuming that canyon sweetvetch was not found in the survey discussed above, the commitments discussed above and those already in the plan should be adequate to protect important biological resources.

The current mining and reclamation plan does not include an interim revegetation plan. Every reference to revegetation under R645-301-330 appears to apply to final reclamation. The plan needs to show how vegetation will be established for interim stabilization of disturbed areas to minimize surface erosion. This may include all or part of the plan for final reclamation.

It is recommended that Andalex use the final reclamation seed mixture shown on page 80 and the planting mixture shown on page 76 of the mining and reclamation plan for interim revegetation. The fan portal will not be visited regularly from the surface; therefore, any revegetated area will provide wildlife habitat while the fan is in place.

Findings

Andalex needs to make the following commitments:

1. Andalex needs to commit to no construction activities within one-half mile of the golden eagle nest during the nesting season, February 15 to July 15. In places that are both within line-of-sight and one-half mile of the nest, there should also be no new road construction.
2. There should be no construction activities from December 1 to April 15 to minimize disturbance to wintering elk and deer. If it is necessary to do construction during this period, some flexibility may be allowed but would need to be coordinated with the Bureau of Land Management, the State Division of Wildlife Resources, and the Division.
3. Except for snow removal, all routine maintenance should be done from within the mine from December 1 to July 1.

Even if construction is completed before December 1, it is important that employees not harass any deer or elk that have already moved into winter range.

The mining and reclamation plan needs to contain a plan for interim revegetation.

R645-301-340

Reclamation Plan

Analysis

The proposal includes no new plans under this regulation.

The current mining and reclamation plan (new-reformatted) shows two seeding/planting mixtures. Either of these could be used for the fan portal area, but the plan needs to specify which will be used and what transplants will be planted. It is recommended that Andalex use the seed/planting mixture on page 80 with the transplants only used within about twenty feet of the drainage.

In 1994, Andalex attempted to transplant several shrubs on the topsoil pile near the Apex Mine. Vegetation is already established on this topsoil pile, but there are few shrubs. Most or all of the transplants died. Rather than trying to transplant more shrubs onto the Apex Mine topsoil pile, Andalex should try to show that shrubs can be successfully established by planting them on the fan portal topsoil pile. The pile should be left in a roughened condition and seeded with the seed mixture on page 80 this fall. In the spring, Andalex should plant shrubs from the list shown on page 74. These species would not be used in final reclamation at the fan portal if Andalex uses the recommendations given above, but using them on the topsoil pile would give some indication as to whether they can be successfully transplanted at the main mine site.

The amendment says on page 61, section R645-301-310, that the drainage area reference area is the most adaptable to the left fork fan installation. This reference area is appropriate for judging revegetation success for the fan portal area.

Findings

The plan needs to specify which seed/planting mixtures will be used for revegetation of the fan portal area. Andalex needs to try planting a shrub mixture on the fan portal topsoil pile as a field trial to see if shrubs can be successfully reestablished.

R645-301-411

Land Use Environmental Description

Analysis

The proposal includes the findings of an archaeological survey performed on

September 21, 1994. The investigators only checked the proposed pad and new access road areas, but the existing access road was checked in a survey done in 1986 by Senco-Phoenix. No sites were found in either survey. The Division should recommend a cultural clearance to the State Historic Preservation Officer.

Premining land uses include wildlife, limited grazing, and recreation

No new postmining land use information is presented for the fan portal area. The mining and reclamation plan says that postmining land uses will be the same as premining uses.

According to Section R645-301-330, the road in the Left Fork of Deadman Canyon will be left permanently after reclamation. The mining and reclamation plan says that Andalex will reestablish the terrain to as nearly the original as practical.

Because the road was present prior to any mining, Andalex should be allowed to leave it after mining operations have ended. Keeping with the commitment in the plan, the terrain along the road will need to be reestablished to as nearly the original as practical.

Findings

Andalex has supplied information and included commitments in the mining and reclamation plan adequate to satisfy the requirements of this regulation. The Division needs to obtain a clearance from the State Historic Preservation Officer. There is no reason to believe the clearance will not be given.

RECOMMENDATIONS

Andalex needs to complete this project as soon as possible, and any delay may mean that the project is delayed until July. Although there are several deficiencies that need to be addressed, the only problems in these sections that need to be taken care of before construction begins concern right-of-entry. Immediately after construction, Andalex would need to know which seed/planting mix would be used for interim revegetation. Other problems concern post-construction operation and reclamation. The approval could stipulate that these problems be addressed, or the Division could order it done.



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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355 West North Temple
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801-538-5319 (TDD)

November 16, 1994

TO: File

TO: Daron Haddock, Permit Supervisor

FROM: Henry Sauer, Senior Reclamation Soils Specialist 

RE: Aberdeen Mine Left Fork Fan Installation Amendment,
Andalex Resources, Centennial Project, ACT/007/019-94G,
Folder #2, Carbon County, Utah

SYNOPSIS

The permittee submitted a proposal to install a new fan portal at the Aberdeen Mine (Left Fork Fan). An informal review of the requisite soil survey was performed by this writer approximately one month ago.

ANALYSIS

This writer's informal review revealed the commitment to salvage topsoil from the disturbed area (Soil Survey and Topsoil Salvage Plan {Appendix M of the MRP} conducted by Chris Hansen representing Earth Fax Engineering) did not meet the minimum regulatory requirements for topsoil salvage (R645-301-232.100.). This deficiency was discussed with Mr. Micheal Glasson (Andalex Resources) and Mr. Chris Hansen. Consequently, the permittee's consultant revised (Revision Date: November 10, 1994) pages 9 and 10 and Attachment C of the soil survey report.

The commitment for the removal and segregation of topsoil from the surface disturbance associated with the installation of the Left Fork Fan, as revised, is adequate to meet the minimum regulatory requirement for topsoil salvage.

RECOMMENDATION

Approve Amendment ACT 007/019-94G.





State of Utah
DEPARTMENT OF NATURAL RESOURCES
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801-538-5319 (TDD)

November 1, 1994

TO: Daron Haddock, Permit Supervisor

FROM: Steven M. Johnson, Reclamation Hydrologist 

RE: Draft Review, IBC--Remote Fan Installation, Centennial Project, Andalex Resources, ACT/007/019, Working File, Carbon County, Utah

SYNOPSIS

Andalex Resources, Inc. submitted an amendment to their Mining and Reclamation Plan (MRP) for the construction of a new fan portal on September 12, 1994. The first submittal was not approved by the Division so Andalex Resources resubmitted on October 24, 1994. The project requires an incidental boundary change (IBC). The hydrology of the submittal was reviewed on October 3, 1994.

ANALYSIS

HYDROLOGIC INFORMATION

Regulatory Reference: R645-301-722.500, 731.100, 731.600, 732.400, 742, 742.110, 742.300, 742.313, 742.320, 742.400, 751, 752, 760, 762

Analysis:

Construction of the fan portal and pad area in Left-Hand Fork of Deadman Canyon will require road improvements to an existing trail. The Bureau of Land Management (BLM) right of way application shows that the road will be graded from the existing county road to the fan portal pad. The purpose of the right-of-way is construction and maintenance access to the fan facility. Andalex has included two culverts into the design of the road and a series of water bars to rout water off of the road. The first culvert, located in the main canyon, is near the junction of the new road and the county road. The second is located below the pad fill, and is called the Upper Canyon Culvert. Andalex has included calculations and designs for the culverts. Portions of the road and the pad, and the entire topsoil pile are shown to be located within 100 feet of the stream channel.



Sediment control is shown on a Plate LF-1, Aberdeen Mine Left-Hand Fork Fan Installation Sedimentation/Drainage Control, as silt fence and/or straw dike along the base of the pad fill. Berms and a ditch will route flow from the upper portions of the pad to the sediment control measure. Top soil will be placed up canyon from the pad and will be encompassed by a berm.

Findings:

Andalex proposes to build a road and pad within 100 feet of the Left-Hand Fork stream channel. The drainage area for this reach is greater than one square mile, so, by regulation, this is an intermittent stream. No stream alteration permit is required by the Utah Division of Water Rights because it is not by their definition an intermittent or perennial stream. However, by the Utah coal mining rules it is an intermittent stream so all regulation regarding that definition, including stream buffer zones should be addressed to comply with R645-301-731.600, 732.400, and 742.320.

The use of alternate sediment control measures is allowable by the regulations. A diversion is shown on the map to help route flow to the sediment control, but there were no designs included for this diversion. Miscellaneous diversions should be designed to convey the 2-year, 10-hour storm event for miscellaneous flows (R645-301-742.333). Andalex has not included plans for sediment control in the construction stages of the pad and road and in the reclamation stages of these facilities. It is assumed that sediment control on the topsoil pile is a retention berm, but no design for such berm was included. The map shows a berm around the pad area but no designs or mention for sediment control on the pad.

Drainage control for the road includes two culverts which route the main channel under the road. Andalex has designed water bars to route the smaller drainages across the road. There is no reclamation times schedule or reclamation sediment control plans for the pad area, road, and culverts. Andalex should submit these plans in accordance with R645-301-542-600, 742.313, and 764.

RECOMMENDATION

Andalex's amendment addressing the construction of the Left-Hand Fork Fan portal is not complete and should not be approved. Andalex has not properly addressed activity within the stream buffer zone and reclamation. They should commit to do work within the stream buffer zone only in periods of no flow. Andalex should submit reclamation plans in accordance with R645-301-542-600, 742.313, and 764. They have not submitted sufficient information and designs on miscellaneous diversions and berms on the pad and top

Page 3
ACT/007/019-94G
November 1, 1994

soil pile. Andalex should submit these design and pages, or revised pages, to be inserted into the text of the MRP addressing the proposed activity.

FAN_IBC.SJ



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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801-538-5319 (TDD)

November 29, 1994

TO: Daron Haddock, Permit Supervisor

FROM: Wayne H. Western, Reclamation Engineer *WHW*

RE: IBC, Remote Fan Installation, Andalex Resources, Inc., Centennial Complex, ACT/007/019, Folder #2, Carbon County, Utah

Synopsis of Proposal

The Operator proposes upgrading part of an existing dirt road and constructing a new road for access to the Left-Hand Fork fan installation. The existing road begins at Carbon County Road 299 and will be upgraded for maintenance and emergency access. The new road will be a single lane dirt road approximately 15 feet wide and 4000 feet long. There will be at least three widened sections to allow passing. The grade ranges from 0% to 15%.

The pad is approximately 320 feet long, 170 feet wide and 50 feet high. Three portals and a fan will be installed on the pad. The pad consists of a cut section where the portals and fan will be installed and a fill section. Fill will be placed in the drainage below the portals. A 42" culvert will be placed in the drainage before the fill being placed.

Topsoil from the pad and road will be placed in a storage area west of the pad. A short ancillary road will be constructed from the existing road to the topsoil storage area.

Reclamation costs for the project area estimated by the Operator to be \$7,540. The current reclamation bond is for \$1,080,000.

Analysis

R645-301-534.130 says that all roads must have, at a minimum, a static safety factor of 1.3 for all embankments. The Operator says that all road embankments will have safety factors of 1.3 or greater. There are no stability studies in the PAP nor reference to the MRP that shows the slopes are stable.

The Operator has failed to mention what the safety factor for the pad will be. Nor does he describe how the fill will be placed. At a minimum the slopes of the pad must



have a static safety factor of 1.3 and the lifts should be 4 feet thick or less.

The Operator did not address how reclamation of the pad will be accomplished, nor did he provide any maps that showed the reclaimed area. (R645-301-540 through R645-301-542.)

Recommendations

1. The Operator must demonstrate that all road embankments have a minimum static safety factor of 1.3.
2. The Operator must describe how the pad will be constructed. That description must include how the lifts will be placed and their maximum thickness. Static safety factor for both the cut and fill slopes must be shown to be at a minimum 1.3.
3. The Operator must supply a reclamation plan for how the pad area will be reclaimed. The reclamation plan must include maps showing the reclaimed surfaces.

PERMIT CHANGE TRACKING FORM

DATE RECEIVED	9/12/94	PERMIT NUMBER	ACT/007/019
Title of Proposal:	Iba, Remote	PERMIT CHANGE #	946
Description:	Fur Installation	PERMITTEE	Godalex
		MINE NAME	Centennial

	DATE DUE	DATE DONE	RESULT
<input type="checkbox"/> 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION			<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED
<input type="checkbox"/> Notice of Review Status of proposed permit change sent to the Permittee.			Permit Change Classification
<input type="checkbox"/> Request additional review copies prior to Division/Other Agency review.			<input type="checkbox"/> Significant Permit Revision
<input type="checkbox"/> Notice of Approval of Publication. (If change is a Significant Revision.)			<input type="checkbox"/> Permit Amendment
<input type="checkbox"/> Notice of request to modify proposed permit change prior to approval.			<input type="checkbox"/> Incidental Boundary Change

REVIEW TRACKING	INITIAL REVIEW		MODIFIED REVIEW		FINAL REVIEW AND FINDINGS	
DOGM REVIEWER	DUE	DONE	DUE	DONE	DUE	DONE
<input checked="" type="checkbox"/> Administrative Paul	10/14		11/18			
<input checked="" type="checkbox"/> Biology Paul	10/14		11/18			
<input checked="" type="checkbox"/> Engineering Wayne	10/14		11/18			
<input type="checkbox"/> Geology						
<input checked="" type="checkbox"/> Soils Henry	10/14		11/18		11/9 Working out some details!	
<input checked="" type="checkbox"/> Hydrology Steve	10/14		11/18		Steve	
<input checked="" type="checkbox"/> Bonding Wayne	10/14		11/18			
<input type="checkbox"/> AVS Check						

COORDINATED REVIEWS	DUE	DONE	DUE	DONE	DUE	DONE
<input type="checkbox"/> OSMRE						
<input type="checkbox"/> US Forest Service						
<input type="checkbox"/> Bureau of Land Management						
<input type="checkbox"/> US Fish and Wildlife Service						
<input type="checkbox"/> US National Parks Service						
<input type="checkbox"/> UT Environmental Quality						
<input type="checkbox"/> UT Water Resources						
<input type="checkbox"/> UT Water Rights						
<input type="checkbox"/> UT Wildlife Resources						
<input type="checkbox"/> UT State History						
<input type="checkbox"/> Other						

<input type="checkbox"/> Public Notice/Comment/Hearing Complete (If the permit change is a Significant Revision)	<input type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date. <input type="checkbox"/> Permit Change Denied.
<input type="checkbox"/> Copies of permit change marked and ready for MRP.	<input type="checkbox"/> Notice of <input type="checkbox"/> Approval <input type="checkbox"/> Denial to Permittee.
<input type="checkbox"/> Special Conditions/Stipulations written for approval.	<input type="checkbox"/> Copy of Approved Permit Change to File.
<input type="checkbox"/> TA and CHIA modified as required.	<input type="checkbox"/> Copy of Approved Permit Change to Permittee.
<input type="checkbox"/> Permit Change Approval Form ready for approval.	<input type="checkbox"/> Copies to Other Agencies and Price Field Office.

PERMIT CHANGE TRACKING FORM

DATE RECEIVED	9/12/94	PERMIT NUMBER	ACT/007/019
Title of Proposal:	Ibc, Remote	PERMIT CHANGE #	946
Description:	Fan Installation	PERMITTEE	Indalex
		MINE NAME	Centennial

<input type="checkbox"/> 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION <input type="checkbox"/> Notice of Review Status of proposed permit change sent to the Permittee. <input type="checkbox"/> Request additional review copies prior to Division/Other Agency review. <input type="checkbox"/> Notice of Approval of Publication. (If change is a Significant Revision.) <input type="checkbox"/> Notice of request to modify proposed permit change prior to approval.	DATE DUE	DATE DONE	RESULT	
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			Permit Change Classification	
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<input checked="" type="checkbox"/> Biology <u>Paul</u>	10/14					
<input checked="" type="checkbox"/> Engineering <u>Wayne</u>	10/14					
<input type="checkbox"/> Geology						
<input checked="" type="checkbox"/> Soils <u>Henry</u>	10/14					
<input checked="" type="checkbox"/> Hydrology <u>Steve</u>	10/14					
<input checked="" type="checkbox"/> Bonding <u>Wayne</u>	10/14					
<input type="checkbox"/> AVS Check						

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<input type="checkbox"/> US Forest Service						
<input type="checkbox"/> Bureau of Land Management						
<input type="checkbox"/> US Fish and Wildlife Service						
<input type="checkbox"/> US National Parks Service						
<input type="checkbox"/> UT Environmental Quality						
<input type="checkbox"/> UT Water Resources						
<input type="checkbox"/> UT Water Rights						
<input type="checkbox"/> UT Wildlife Resources						
<input type="checkbox"/> UT State History						
<input type="checkbox"/> Other						

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