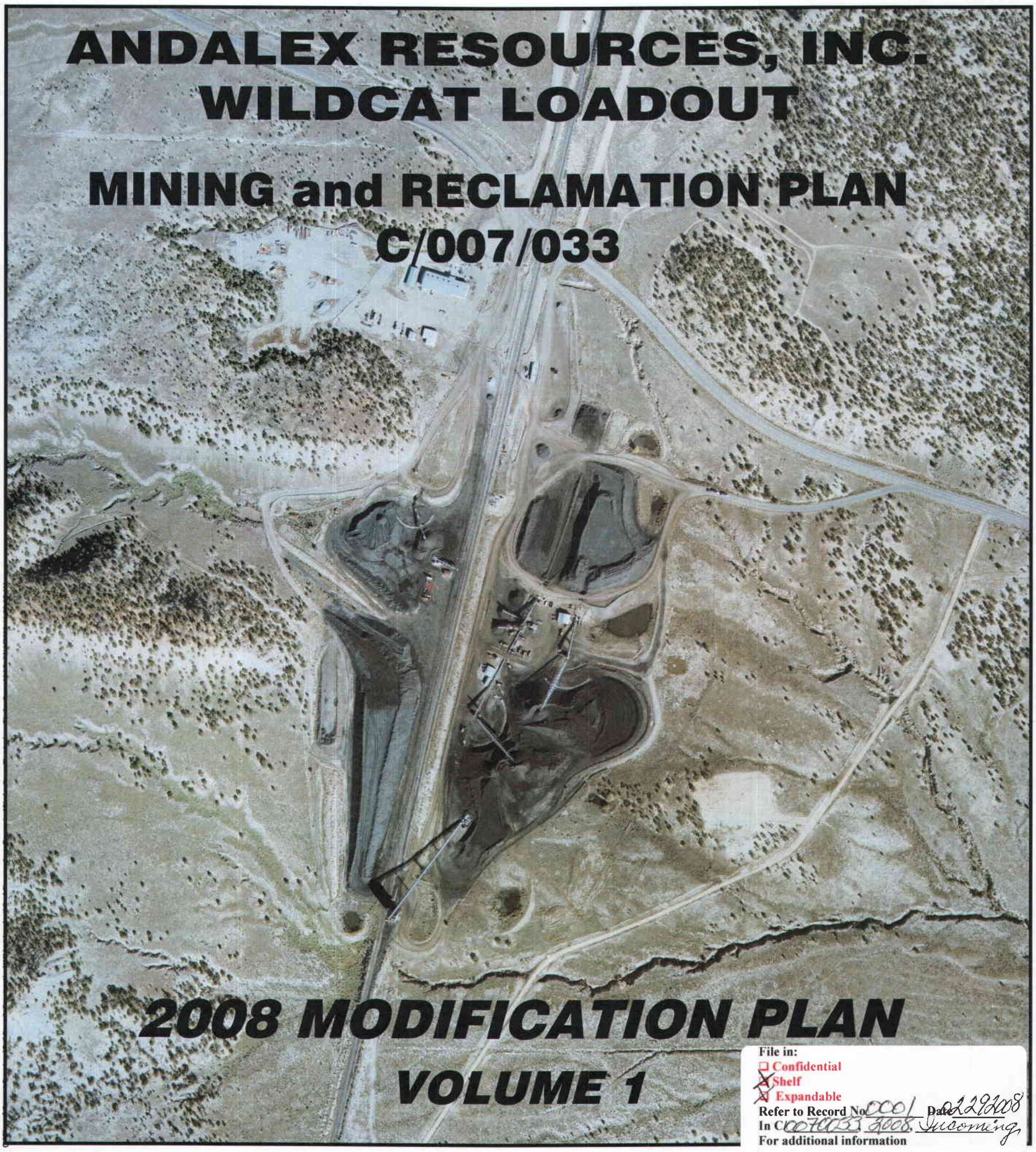
ANDALEX RESOURCES, INC.
WILDCAT LOADOUT

MINING and RECLAMATION PLAN
C/007/033



2008 MODIFICATION PLAN
VOLUME 1

File in:
☐ Confidential
☒ ~~Shelf~~
☒ ~~Expandable~~
Refer to Record No 0001 Date 02/29/2008
In C/007/033, 2008, Incoming
For additional information

PUBLIC NOTICE FOR PERMIT CHANGE
WILDCAT LOADOUT

Andalex Resources, Inc., P.O. Box 902, Price, Utah, has filed with the Utah Division of Oil, Gas and Mining a complete application for a change to the existing Mining and Reclamation Plan C/007/033 for the Wildcat Loadout located at 3 miles west on Consumers Road, Helper, Utah. This change proposes to add 170 acres of BLM right-of-way U-48027 to the permit area for the purpose of expanding the coal storage area and increasing the capacity of the sediment control structures. This would involve an additional surface disturbance of 18.09 acres. The permit area is located in Carbon County, depicted on the Standardville USGS topographic quadrangle map, and is described as follows:

T. 13 S., R. 9 E. SLBM
Section 33: SE1/4SW1/4NE1/4, E1/2SW1/4, SE1/4

A copy of this application is available for inspection at the Division of Oil, Gas and Mining at 1594 West North Temple, Suite 1210, Salt Lake City, Utah. Comments, objections, or requests for informal conference on the application should be submitted within 30 days to: Utah Coal Program, Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, P.O. Box 145801, Salt Lake City, Utah 84114-5801.

RECEIVED
FEB 29 2008
DIV. OF OIL, GAS & MINING

File in:
☐ Confidential
☒ Shelf
☒ Expandable
Refer to Record No 0001 Date 02292008
In C/007/033, 2008, Incoming
For additional information

ANDALEX
RESOURCES, INC.

P.O. BOX 902
PRICE, UTAH 84501
PHONE (435) 637-5385
FAX (435) 637-8860

February 29, 2008

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

Attn: Pamela Grubaugh-Littig
Permit Supervisors

RE: Andalex Resources, Inc.,
Wildcat Loadout, C/007/0033
Submittal of 2008 Modification Plan

Dear Ms. Grubaugh-Littig:

Enclosed please find three copies of the Wildcat Loadout 2008 Modification Plan. This submittal also responds to the DO-04, and the mid-term review. Attached is a electronic (PDF) copy of the submittal as well.

Should you have any questions regarding this issue, please feel free to contact me.

Sincerely,

David Shaver
Resident Agent

RECEIVED
FEB 29 2008
DIV. OF OIL, GAS & MINING

Form DOGM - C1 (Last Revised February 27, 2008) File Folder # 3

APPLICATION FOR PERMIT PROCESSING

Permit Change ☐	New Permit ☐	Renewal ☐	Transfer ☐	Exploration ☐	Bond Release ☐	Permit Number: 007/033

Title of Proposal: 2008 Modification Plan, also response to DO-04, also response to mid-term review

Mine: Wildcat Loadout

Permittee: **Andalex Resources, Inc.**

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

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

X Yes	☐ No	1. Change in the size of the Permit Area? 170 acres Disturbed Area? 21 acres X increase ☐ decrease.
X Yes	☐ No	2. Is the application submitted as a result of a Division Order?
☐ Yes	X No	3. Does application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes	X No	4. Does application include operations in hydrologic basins other than as currently approved?
☐ Yes	X No	5. Does application result from cancellation, reduction or increase of insurance or reclamation bond?
X Yes	☐ No	6. Does the application require or include public notice/publication?
X Yes	☐ No	7. Does the application require or include ownership, control, right-of-entry, or compliance information?
X Yes	☐ No	8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes	X No	9. Is the application submitted as a result of a Violation?
☐ Yes	X No	10. Is the application submitted as a result of other laws or regulations or policies? Explain:
☐ Yes	X No	11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes	X No	12. Does the application require or include underground design or mine sequence and timing?
X Yes	☐ No	13. Does the application require or include collection and reporting of any baseline information?
X Yes	☐ No	14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
X Yes	☐ No	15. Does application require or include soil removal, storage or placement?
X Yes	☐ No	16. Does the application require or include vegetation monitoring, removal or revegetation activities?
X Yes	☐ No	17. Does the application require or include construction, modification, or removal of surface facilities?
X Yes	☐ No	18. Does the application require or include water monitoring, sediment or drainage control measures?
X Yes	☐ No	19. Does the application require or include certified designs, maps, or calculations?
☐ Yes	X No	20. Does the application require or include subsidence control or monitoring?
X Yes	☐ No	21. Have reclamation costs for bonding been provided for?
☐ Yes	X No	22. Does application involve a perennial stream, a stream buffer zone or discharges to a stream?
X Yes	☐ No	23. Does the application affect permits issued by other agencies or permits issued to other entities?

☐ **Attach _3_ complete copies of the application.**

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein. (R645-301-123)

Signed - Name - Position - Date

Subscribed and sworn to before me this ___ day of _____, ____.

Notary Public

My Commission Expires:

Attest: STATE OF } ss:
COUNTY OF }

Received by Oil, Gas & Mining
RECEIVED
FEB 29 2008
DIV. OF OIL, GAS & MINING

ASSIGNED TRACKING NUMBER

Application **for Permit Processing**
Detailed Schedule of Changes to the MRP

Title of Application: 2008 Modification Plan, also response to DO-04,

also response to mid-term review

Permit Number: 007/033

Mine: Wildcat Loadout

Permittee: Andalex Resources, Inc

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

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☒ REPLACE	☐ REMOVE	All text (Contents, Chap 1 thru 8)
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plates 1, 1A, 2, 3D, 13C
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Plates 1A-a, 3D-a, 29
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	App 1 Supplement
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	

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

RECEIVED

FEB 29 2008

DIV. OF OIL, GAS & MINING

ANDALEX
RESOURCES, INC.

P.O. BOX 902
PRICE, UTAH 84501
PHONE (435) 637-5385
FAX (435) 637-8860

June 15, 2007

Pamela Grubaugh-Littig and Wayne Hedberg
Permit Supervisors
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

Re: Wildcat Loadout
C/007/033
2007 Modification Plan

Dear Ms. Littig and Mr Hedberg:

Enclosed are 6 each copies of the Wildcat Loadout 2007 Modification Plan. This plan change consists of:

1) Response to Division Order DO-04 (a.k.a. Wind-blown Fines)

2) Expansion of the Primary Coal Storage Area

3) Preparation of a Material Storage Area

If you have questions or comments please contact me at 435-888-4017.

Sincerely,

Dave Shaver
Resident Agent

RECEIVED
JUN 18 2007

Form DOGM - C1 (Last Revised June 14, 2007) File Folder #:

APPLICATION FOR PERMIT PROCESSING

Permit Change [X]	New Permit ☐	Renewal ☐	Transfer ☐	Exploration ☐	Bond Release ☐	Permit Number: C/007/033

Title of Proposal: 2007 Modification Plan, also response to DO-04

This is a change to the approved MRP

Mine: WILDCAT LOADOUT

Permittee: **ANDALEX Resources, Inc.**

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

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

☐ Yes	☐ No	1. Change in the size of the Permit Area? 170 acres Disturbed Area? 21 acres [X] increase ☐ decrease.
[X] Yes	☐ No	2. Is the application submitted as a result of a Division Order? in part
☐ Yes	[X] No	3. Does application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes	[X] No	4. Does application include operations in hydrologic basins other than as currently approved?
☐ Yes	[X] No	5. Does application result from cancellation, reduction or increase of insurance or reclamation bond?
[X] Yes	☐ No	6. Does the application require or include public notice/publication?
[X] Yes	☐ No	7. Does the application require or include ownership, control, right-of-entry, or compliance information?
[X] Yes	☐ No	8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes	[X] No	9. Is the application submitted as a result of a Violation?
☐ Yes	[X] No	10. Is the application submitted as a result of other laws or regulations or policies? Explain:
☐ Yes	[X] No	11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes	[X] No	12. Does the application require or include underground design or mine sequence and timing?
[X] Yes	☐ No	13. Does the application require or include collection and reporting of any baseline information?
[X] Yes	☐ No	14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
[X] Yes	☐ No	15. Does application require or include soil removal, storage or placement?
[X] Yes	☐ No	16. Does the application require or include vegetation monitoring, removal or revegetation activities?
[X] Yes	☐ No	17. Does the application require or include construction, modification, or removal of surface facilities?
[X] Yes	☐ No	18. Does the application require or include water monitoring, sediment or drainage control measures?
[X] Yes	☐ No	19. Does the application require or include certified designs, maps, or calculations?
☐ Yes	[X] No	20. Does the application require or include subsidence control or monitoring?
[X] Yes	☐ No	21. Have reclamation costs for bonding been provided for?
☐ Yes	[X] No	22. Does application involve a perennial stream, a stream buffer zone or discharges to a stream?
[X] Yes	☐ No	23. Does the application affect permits issued by other agencies or permits issued to other entities?

☐ **Attach _3_ complete copies of the application.**

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein. (R645-301-123)

Signed - Name - Position - Date — agent 6/14/07

Subscribed and sworn to before me this 14 day of June 2007.

Notary Public

My Commission Expires: 07-26-2010

Attest: STATE OF UTAH
COUNTY OF CARBON

TERRI L. ALLRED
NOTARY PUBLIC • STATE of UTAH
1321 South 600 West
Price, UT 84501
MY COMMISSION EXPIRES: 07-26-2010

Received by Oil, Gas & Mining
RECEIVED
JUN 15 2007
DIV. OF OIL, GAS & MINING

ASSIGNED TRACKING NUMBER

Application **for Permit Processing**
Detailed Schedule of Changes to the MRP

1/4

Title of Application: 2007 Modification Plan, also response to DO-04

This is a change to the approved MRP

Permit Number: C/007/033

Mine: WILDCAT LOADOUT

Permittee: ANDALEX RESOURCES

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

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☒ REPLACE	☐ REMOVE	All text in all chapters
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Appendix A : old App A was archeology
☐ ADD	☐ REPLACE	☐ REMOVE	information which has been moved
☐ ADD	☐ REPLACE	☐ REMOVE	to the Confidential Binder. New
☐ ADD	☐ REPLACE	☐ REMOVE	App A has the Ownership & Control
☐ ADD	☐ REPLACE	☐ REMOVE	and the Current and Previous Coal
☐ ADD	☐ REPLACE	☐ REMOVE	Mining permits
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Appendix B Part A-12 BLM Right-of-way
☐ ADD	☐ REPLACE	☐ REMOVE	Amendment #5
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Appendix B Part B History of Violations
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Appendix B Part C Insurance
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Appendix D Supplements
☐ ADD	☐ REPLACE	☐ REMOVE	Soils Report, James Nyenhuis
☐ ADD	☐ REPLACE	☐ REMOVE	Soils Report, Priscilla Burton
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Appendix I Supplement
☐ ADD	☐ REPLACE	☐ REMOVE	Vegetation Reference Report
☐ ADD	☐ REPLACE	☐ REMOVE	

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

RECEIVED

JUN 15 2007

DIV OF OIL, GAS & MINING

Application for Permit Processing
Detailed Schedule of Changes to the MRP

2/4

Title of Application: 2007 Modification Plan, also response to DO-04

This is a change to the approved MRP

Permit Number: C/007/033

Mine: WILDCAT LOADOUT

Permittee: ANDALEX RESOURCES

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

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☐ REPLACE	☒ REMOVE	Appendix M
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Appendix O Supplement
☐ ADD	☐ REPLACE	☐ REMOVE	Chemical Analysis of Refuse Material
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☒ REMOVE	Appendix P
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☒ REMOVE	Appendix Q
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Appendix R Sedimentation and
☐ ADD	☐ REPLACE	☐ REMOVE	Drainage Control Plan
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Appendix S 2007 Modification Plan
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Appendix T BLM R-O-W Extension
☐ ADD	☐ REPLACE	☐ REMOVE	Environmental Analysis
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Appendix U Coal Fines Accumulation Map
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Confidential Binder (contains previous
☐ ADD	☐ REPLACE	☐ REMOVE	and new archeology information)
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	

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

RECEIVED
JUN 15 2007
DIV OF OIL, GAS & MINING

Application for Permit Processing
Detailed Schedule of Changes to the MRP

3/4

Title of Application: 2007 Modification Plan, also response to DO-04

This is a change to the approved MRP

Permit Number: C/007/033

Mine: WILDCAT LOADOUT

Permittee: ANDALEX RESOURCES

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

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 1 As Constructed Surface Facilities
☐ ADD	☐ REPLACE	☐ REMOVE	
☒ ADD	☐ REPLACE	☐ REMOVE	Plate 1A Proposed Surface Facilities
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 2 Watershed & Topo / Drainge Map
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plates 3, 4, 5, 6 & 7 with Plates 3A, 3B,
☐ ADD	☐ REPLACE	☐ REMOVE	3C, 3D, 3E, 3F, 3G, 3H
☐ ADD	☒ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 8 Reclamation Hydrology
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 9 Reclamatin Contours
☐ ADD	☐ REPLACE	☒ REMOVE	Plate 10 Cross Sections
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 11 Soils
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 12 Geology
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 13 with Plates 13A and 13B
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☒ REMOVE	Plates 14 Reference Map
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 15
☐ ADD	☐ REPLACE	☐ REMOVE	

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

Note: All previous maps and plates (done on mylar) have been replaced with new electronic plates.

RECEIVED

JUN 15 2007

DIV OF OIL, GAS & MINING

Application for Permit Processing
Detailed Schedule of Changes to the MRP

4/4

Title of Application: 2007 Modification Plan, also response to DO-04

This is a change to the approved MRP

Permit Number: C/007/033

Mine: WILDCAT LOADOUT

Permittee: ANDALEX RESOURCES

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

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 16 Ownership
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 17 and 17A with Plate 17
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 18 with Plate 36
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	

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

RECEIVED
JUN 15 2007
DIV. OF OIL, GAS & MINING

TABS

**********NOTE**********

ALL INFORMATION SHOWN IN RED HAS BEEN MODIFIED, ADDED, OR DELETED FROM THE EXISTING APPROVED M.R.P. (INCORPORATED MAY 17, 2006). ALL INFORMATION SHOWN IN BLACK HAS NOT BEEN CHANGED FROM THE APPROVED VERSION

C1/C2

1) CONTENTS

2) CHAPTER 1 LEGAL

3) CHAPTER 2 BIOLOGY

4) CHAPTER 3 SOILS

5) CHAPTER 4 LAND USE

6) CHAPTER 5 ENGINEERING

7) CHAPTER 6 GEOLOGY

8) CHAPTER 7 HYDROLOGY

9) CHAPTER 8 BONDING

10) APPENDIX A PART 1 Ownership and Control

11) APPENDIX A PART 2 Current and Previous Permits

12) APPENDIX B PART A-1 DOGM Permit

13) APPENDIX B PART A-2 Utah Railway, Lease Agreement

14) APPENDIX B PART A-3 Utah Railway, Amendment to Lease

15) APPENDIX B PART A-4 Utah Railway, Amended Trackage Agreement

16) APPENDIX B PART A-5 Agreement with Beaver Creek Coal Co.

17) APPENDIX B
PART A-6 BLM Right-of-Way Grant

18) APPENDIX B
PART A-7 BLM Notice to Proceed with Construction

19) APPENDIX B
PART A-8 BLM Access Road Right-of-Way

20) APPENDIX B
PART A-9 BLM Right-of-Way, Amendment No. 1

21) APPENDIX B
PART A-10 BLM Right-of-Way, Amendment No. 2

22) APPENDIX B
PART A-11 BLM Right-of-Way, Amendment No. 3, 4

23) APPENDIX B
PART A-12 BLM Right-of-Way, Amendment No. 5, Feb 5, 2007

24) APPENDIX B
PART A-13 Utah Div of Air Quality-Approval Order

25) APPENDIX B
PART A-14 Utah Dept of Transmission,
Approval for Reduced Rail Clearance

26) APPENDIX B
PART A-15 Southeastern Utah District Health Dept.
Wastewater Disposal System Approval

27) APPENDIX B
PART A-16 State Div of History, Archeological Clearance
(Moved to CONFIDENTIAL BINDER)

28) APPENDIX B
PART A-17 State Div of History, Archeological Survey
(Moved to CONFIDENTIAL BINDER)

29) APPENDIX B
PART A-18 State Div of Water Rights
Approved Application

30) APPENDIX B
PART A-19 State Div of Wildlife Resources
Electric Transmission Pole Acceptance

31) APPENDIX B
PART A-20 U.S. Dept of Interior, Powerline Approval

32) APPENDIX B
PART A-21 State Div of Water Quality
UPDES Permit

33) APPENDIX B
PART B History of Violations

34) APPENDIX B
PART C Insurance

35) APPENDIX B
PART D Bond Information

36) APPENDIX C Soil and Foundation Investigation

37) APPENDIX D Soil Survey
SUPPLEMENT Soils Report, James Nyenhuis
SUPPLEMENT Soils Report, Material Storage Area, Priscilla Burton

38) APPENDIX E Wildlife Enhancement Project

39) APPENDIX F Wildlife Resources Information

40) APPENDIX G Garley Canyon Spring Water Rights/Analysis

41) APPENDIX H Sediment Pond Certification and R-69 Forms

42) APPENDIX I Vegetation Survey
SUPPLEMENT Vegetation Reference Report, Nebo Scientific

43) APPENDIX J Probable Hydrologic Consequences of Operations at the Wildcat Loadout

44) APPENDIX K Deleted

45) APPENDIX L Grade Control Structures

46) APPENDIX M Deleted

47) APPENDIX N Vegetation Test Plot Monitoring

48) APPENDIX O Coal Processing Waste Pile
SUPPLEMENT Chemical Analysis of Refuse Material

49) APPENDIX P Deleted

50) APPENDIX Q — Deleted

51) APPENDIX R — Sedimentation and Drainage Control Plan

52) APPENDIX S — 2008 Modification Plan

53) APPENDIX T — BLM Right-of-Way Extension Environment Analysis, Jan 18, 2007

54) APPENDIX U — Coal Fines Accumulation Map

55) MAPS

CHAPTER 1

TABLE OF CONTENTS

R645-301-100.	GENERAL	1-1
R645-301-110.	LEGAL, FINANCIAL, COMPLIANCE AND	1-1
R645-301-111.	INTRODUCTION	1-2
R645-301-112.	IDENTIFICATION OF INTERESTS	1-4
R645-301-113.	VIOLATION INFORMATION	1-7
R645-301-114.	RIGHT-OF-ENTRY INFORMATION	1-10
R645-301-115.	STATUS OF UNSUITABILITY CLAIMS	1-12
R645-301-116.	PERMIT TERM	1-13
R645-301-117.	INSURANCE, PROOF OF PUBLICATION AND FACILITIES OR STRUCTURES USED IN COMMON	1-13
R645-301-118.	FILING FEE	1-14
R645-301-120.	PERMIT APPLICATION FORMAT AND CONTENTS	1-14
R645-301-121.	REQUIREMENTS	1-14
R645-301-122	REFERENCED MATERIALS	1-15
R645-301-123.	APPLICATION FOR PERMITS, CHANGES, RENEWALS, OR TRANSFERS	1-15
R645-301-130.	REPORTING AND TECHNICAL DATA	1-15
R645-301-131.	TECHNICAL DATA REQUIREMENTS	1-18
R645-301-132.	TECHNICAL ANALYSES REQUIREMENTS	1-19
R645-301-140.	MAPS AND PLANS	1-19
R645-301-141.	MAP FORMATS	1-19
R645-301-142.	PHASES OF OPERATIONS AND MINING ACTIVITY	1-19
R645-301-150.	COMPLETENESS	1-23

CHAPTER 2

TABLE OF CONTENTS

R645-301-200.	SOILS	2-1
R645-301-211.	PREMINING SOIL RESOURCES	2-2
R645-301-212.	STOCKPILING AND REDISTRIBUTION	2-2
R645-301-220.	ENVIRONMENTAL DESCRIPTION	2-8
R645-301-221.	PRIME FARMLAND INVESTIGATION	2-8
R645-301-222.	SOIL SURVEY	2-8
R645-301-223.	SOIL CHARACTERIZATION	2-9
R645-301.224.	SUBSTITUTE TOPSOIL	2-9
R645-301-230.	OPERATION PLAN	2-12
R645-301-231.	GENERAL REQUIREMENTS	2-12
R645-301-232.	TOPSOIL AND SUBSOIL REMOVAL	2-12
R645-301-233.	TOPSOIL SUBSTITUTES AND SUPPLEMENTS	2-14
R645-301-234.	TOPSOIL STORAGE	2-15
R645-301-240.	RECLAMATION PLAN	2-16
R645-301-241.	GENERAL REQUIREMENTS	2-27
R645-301-242.	SOIL REDISTRIBUTION	2-28
R645-301-243.	SOIL NUTRIENTS AND AMENDMENTS	2-29
R645-301-244.	SOIL STABILIZATION	2-29
R645-301-250.	PERFORMANCE STANDARDS	2-29
R645-301-251.	SOIL REMOVAL	2-29
R645-301-252.	SOIL STORAGE AND REDISTRIBUTION	2-30

CHAPTER 3

TABLE OF CONTENTS

R645-301-300.	BIOLOGY	3-1
R645-301-310.	INTRODUCTION	3-1
R645-301-311.	VEGETATIVE, FISH AND WILDLIFE RESOURCES	3-14
R645-301-312.	POTENTIAL IMPACTS	3-14
R645-301-313.	RESTORATION OR ENHANCEMENT	3-14
R645-301-320.	ENVIRONMENTAL DESCRIPTION	3-14
R645-301-321.	VEGETATION INFORMATION	3-15
R645-301-322.	FISH AND WILDLIFE INFORMATION	3-15
R645-301-323.	MAPS AND AERIAL PHOTOGRAPHS	3-16
R645-301-330.	OPERATION PLAN	3-16
R645-301-331.	MINIMIZING IMPACT AND SURFACE EROSION .	3-17
R645-301-332.	IMPACTS OF SUBSIDENCE ON RENEWABLE RESOURCE LANDS	3-17
R645-301-333.	USING THE BEST TECHNOLOGY CURRENTLY AVAILABLE TO MINIMIZE DISTURBANCE AND IMPACT	3-17
R645-301-340.	RECLAMATION PLAN	3-18
R645-301-341.	REVEGATATION	3-18
R645-301-342.	FISH AND WILDLIFE	3-27
R645-301-350.	PERFORMANCE STANDARDS	3-28
R645-301-351.	GENERAL REQUIREMENTS	3-28
R645-301-352.	CONTEMPORNEOUS RECLAMATION	3-28
R645-301-353.	REVEGATATION: GENERAL REQUIREMENTS . .	3-28
R645-301-354.	REVEGETATION: TIMING	3-31
R645-301-355.	REVEGETATION MULCHING AND OTHER SOIL	

	STABILIZING PRACTICES	3-31
R645-301-356.	REVEGETATION: STANDARDS FOR SUCCESS . .	3-32
R645-301-357.	REVEGETATION: EXTENDED RESPONSIBILITY PERIOD	3-33
R645-301-358.	PROTECTION OF FISH, WILDLIFE AND RELATED ENVIRONMENTAL VALUES	3-36
	NRCS LETTER ON PRODUCTIVITY	3-38

CHAPTER 4

TABLE OF CONTENTS

R645-301-400.	LAND USE AND AIR QUALITY	4-1
R645-301-410.	LAND USE	4-1
R645-301-411.	ENVIRONMENTAL DESCRIPTION	4-1
R645-301-412.	RECLAMATION PLAN	4-6
R645-301-413.	PERFORMANCE STANDARDS	4-8
R645-301-414.	PERMIT REVISIONS REQUESTING APPROVAL OF ALTERNATE POSTMINING LAND USE	4-9
R645-301-420.	AIR QUALITY	4-9
R645-301-421.	CLEAN AIR ACT AND OTHER APPLICABLE LAWS	4-10
R645-301-422.	UTAH BUREAU OF AIR QUALITY	4-10
R645-301-423.	SURFACE COAL MINING AND RECLAMATION ACTIVITIES EXCEEDING 1,000,000 TONS PER YEAR	4-10
R645-301-424.	FUGITIVE DUST CONTROL - SURFACE COAL MINING AND RECLAMATION OPERATIONS LESS THAN 1,000,000 TONS PER YEAR	4-16
R645-301-425.	AIR QUALITY MONITORING - SURFACE COAL MINING AND RECLAMATION OPERATIONS LESS THAN 1,000,000 TONS PER YEAR	4-16

CHAPTER 5

TABLE OF CONTENTS

R645-301-500.	ENGINEERING	5-1
R645-301-510.	INTRODUCTION	5-1
R645-301-511.	GENERAL REQUIREMENTS	5-6
R645-301-512.	CERTIFICATION	5-6
R645-301-513.	COMPLIANCE WITH MSHA REGULATIONS AND MSHA APPROVALS	5-74
R645-301-514.	INSPECTIONS	5-75
R645-301-515.	REPORTING AND EMERGENCY PROCEDURES	5-77
R645-301-516.	PREVENTION OF SLIDES	5-79
R645-301-520.	OPERATION PLAN	5-79
R645-301-521.	GENERAL	5-79
R645-301-522.	COAL RECOVERY	5-95
R645-301-523.	MINING METHOD(S)	5-95
R645-301-524.	BLASTING AND EXPLOSIVES	5-96
R645-301-525.	SUBSIDENCE	5-96
R645-301-526.	MINE FACILITIES	5-96
R645-301-527.	TRANSPORTATION FACILITIES	5-98
R645-301-528.	HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL, AND COAL MINE WASTE	5-100
R645-301-529.	MANAGEMENT OF MINE OPENINGS	5-102
R645-301-530.	OPERATIONAL DESIGN CRITERIA AND PLANS	5-103
R645-301-531.	GENERAL	5-103
R645-301-532.	SEDIMENT CONTROL	5-103
R645-301-533.	IMPOUNDMENTS	5-103

R645-301-534. ROADS 5-105

R645-301-535. SPOIL 5-107

R645-301-536. COAL MINE WASTE 5-108

R645-301-537. REGRADED SLOPES 5-110

R645-301-540. RECLAMATION PLAN 5-110

R645-301-541. GENERAL 5-110

R645-301-542. NARRATIVES, MAPS AND PLANS 5-117

R645-301-550. RECLAMATION DESIGN CRITERIA AND PLANS . 5-121

R645-301-551. CASING AND SEALING OF UNDERGROUND OPENINGS 5-122

R645-301-552. PERMANENT FEATURES 5-122

R645-301-553. BACKFILLING AND GRADING 5-122

R645-301-560. PERFORMANCE STANDARDS 5-126

CHAPTER 6

TABLE OF CONTENTS

R645-301-600.	GEOLOGY	6-1
R645-301-610.	INTRODUCTION	6-1
R645-301-611.	GENERAL REQUIREMENTS	6-1
R645-301-612.	CROSS SECTION, MAPS AND PLANS	6-4
R645-301-620.	ENVIRONMENTAL DESCRIPTION	6-4
R645-301-621.	GENERAL REQUIREMENTS	6-4
R645-301-622.	CROSS SECTIONS, MAPS AND PLANS	6-4
R645-301-623.	GEOLOGIC INFORMATION	6-5
R645-301-624.	GEOLOGIC INFORMATION	6-5
R645-301-625.	ADDITIONAL INFORMATION	6-7
R645-301-626.	WAIVER FROM COLLECTION AND ANALYSIS	6-7
R645-301-627.	OVERBURDEN	6-7
R645-301-630.	OPERATION PLAN	6-7
R645-301-631.	CASING AND SEALING OF EXPLORATION HOLES AND BOREHOLES	6-7
R645-301-632.	SUBSIDENCE MONITORING	6-8
R645-301-640.	PERFORMANCE STANDARDS	6-8
R645-301-641.	ALL EXPLORATION HOLES AND BOREHOLES	6-8
R645-301-642.	MONUMENTS AND SURFACE MARKERS	6-8

CHAPTER 7

TABLE OF CONTENTS

R645-301-700.	HYDROLOGY	7-1
R645-301-710.	INTRODUCTION	7-1
R645-301-711.	GENERAL REQUIREMENTS	7-2
R645-301-712.	CERTIFICATION	7-8
R645-301-713.	INSPECTION	7-9
R645-301-720.	ENVIRONMENTAL DESCRIPTION	7-9
R645-301-721.	GENERAL REQUIREMENTS	7-9
R645-301-722.	CROSS SECTIONS AND MAPS	7-9
R645-301-723.	SAMPLING AND ANALYSIS	7-9
R645-301-724.	BASELINE INFORMATION	7-15
R645-301-725.	BASELINE CUMULATIVE IMPACT AREA INFORMATION	7-23
R645-301-726.	MODELING	7-24
R645-301-727.	ALTERNATIVE WATER SOURCE INFORMATION	7-24
R645-301-728.	PROBABLE HYDROLOGIC CONSEQUENCES (PHC) DETERMINATION	7-24
R645-301-729.	CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)	7-25
R645-301-730.	OPERATION PLAN	7-26
R645-301-731.	GENERAL REQUIREMENTS	7-26
R645-301-732.	SEDIMENT CONTROL MEASURES	7-32
R645-301-733.	IMPOUNDMENTS	7-33
R645-301-734.	DISCHARGE STRUCTURES	7-37
R645-301-735.	DISPOSAL OF EXCESS SPOIL	7-37
R645-301-736.	COAL MINE WASTE	7-37
R645-301-737.	NON-COAL MINE WASTE	7-38

R645-301-738.	TEMPORARY CASING AND SEALING OF WELLS .	7-38
R645-301-740.	DESIGN CRITERIA AND PLANS	7-38
R645-301-741.	GENERAL REQUIREMENTS	7-38
R645-301-742.	SEDIMENT CONTROL MEASURES	7-38
R645-301-743.	IMPOUNDMENTS	7-45
R645-301-744.	DISCHARGE STRUCTURES	7-47
R645-301-745.	DISPOSAL OF EXCESS SPOIL	7-47
R645-301-746.	COAL MINE WASTE	7-49
R645-301-747.	DISPOSAL OF NON-COAL MINE WASTE	7-51
R645-301-748.	CASING AND SEALING OF WELLS	7-51
R645-301-750.	PERFORMANCE STANDARDS	7-51
R645-301-751.	WATER QUALITY STANDARDS AND EFFLUENT LIMITATIONS	7-52
R645-301-752.	SEDIMENT CONTROL MEASURES	7-52
R645-301-753.	IMPOUNDMENTS AND DISCHARGE STRUCTURES .	7-53
R645-301-754.	DISPOSAL OF EXCESS SPOIL, COAL MINE WASTE AND NON-COAL MINE WASTE	7-53
R645-301-755.	CASING AND SEALING OF WELLS	7-53
R645-301-760.	RECLAMATION	7-53
R645-301-761.	GENERAL REQUIREMENTS	7-53
R645-301-762.	ROADS	7-53
R645-301-763.	SILTATION STRUCTURES	7-53
R645-301-764.	STRUCTURE REMOVAL	7-54
R645-301-765.	PERMANENT CASING AND SEALING OF WELLS .	7-54

CHAPTER 8

TABLE OF CONTENTS

R645-301-800.	BONDING AND INSURANCE	8-1
R645-301-810.	BONDING DEFINITIONS AND DIVISION RESPONSIBILITIES	8-2
R645-301-820.	REQUIREMENT TO FILE A BOND	8-2
R645-301-830.	DETERMINATION OF BOND AMOUNT	8-2
R645-301-840.	GENERAL TERMS AND CONDITIONS OF THE BOND	8-2
R645-301-850.	BONDING REQUIREMENTS FOR UNDERGROUND MINING OPERATIONS	8-2
R645-301-860.	FORMS OF BONDS	8-3
R645-301-870.	REPLACEMENT OF BONDS	8-3
R645-301-880.	REQUIREMENT TO RELEASE PERFORMANCE BONDS	8-3
R645-301-890.	TERMS AND CONDITIONS FOR LIABILITY INSURANCE	8-3

APPENDICES:

Appendix A
PART 1 Ownership and Control

Appendix A
PART 2 Current and Previous Coal Mining Permits

Appendix B
PART A

A-1. DOGM Permit

A-2. Utah Railway, Lease Agreement

A-3. Utah Railway, Amendment to Lease

A-4. Utah Railway, Amended Trackage Agreement

A-5. Agreement with Beaver Creek Coal Company

A-6. BLM Right-of-Way Grant

A-7. BLM Notice to Proceed with Construction

A-8. BLM Access Road Right-of-Way

A-9. BLM Right-of-Way, Amendment No. 1

A-10. BLM Right-of-Way, Amendment No. 2

A-11. BLM Right-of-Way, Amendment No. 3, 4

A-12. BLM Right-of-Way, Amendment No. 5, Feb 5, 2007

A-13. Utah Division of Air Quality- Approval Order

A-14. Utah Dept of Transportation, Approval for Reduced Rail Clearance

A-15. Southeastern Utah District Health Dept., Wastewater Disposal System Approval

A-16. State Div of History, Archeological Clearance (Moved to CONFIDENTIAL BINDER)

A-17. State Div of History, Archeological Survey (Moved to CONFIDENTIAL BINDER)

A-18. State Div of Water Rights, Approved Application

A-19. State Div of Wildlife Resources, Electric Transmission Pole Acceptable

A-20.	U.S. Dept of Interior, Powerline Approval
A-21.	State Div of Environmental Protection, Renewal of Discharge Permit
PART B	History of Violations
PART C	Insurance
PART D	Bond Information
Appendix C	Soil and Foundation Investigation
Appendix D	Soil Survey
Suplmt	Soils Report, James Nyenhuis
Suplmt	Soils Report, Material Storage Area, Priscilla Burton
Appendix E	Wildlife Enhancement Project
Appendix F	Wildlife Resources Information
Appendix G	Garley Canyon Spring Water Rights/Analyses
Appendix H	Sediment Pond Certifications and R-69 Forms
Appendix I	Vegetation Survey
Suplmt	Vegetation Reference Report, Mt Nebo Scientific
Appendix J	Probable Hydrologic Consequences of Operations at the Wildcat Loadout
Appendix K	Deleted
Appendix L	Grade Control Structures
Appendix M	Water Monitoring Data
Appendix N	Vegetation Test Plot Monitoring
Appendix O	Coal Processing Waste Pile
Suplmt	Chemical Analysis of Refuse Material
Appendix P	Deleted
Appendix Q	Deleted
Appendix R	Sedimentation and Drainage Control Plan
Appendix S	2008 Modification Plan

Appendix T — BLM Right-of-Way Extension Environmental Analysis, Jan 18, 2007

Appendix U — Coal Fines Accumulation Map

NOTE: CONFIDENTIAL BINDER CONTAINS ALL ARCHEOLOGY INFORMATION

PLATES

PLATE #	PLATE TITLE
Plate 1	Existing Surface Facility Map
Plate 1A-a	Proposed Surface Facility Map (Phase 1)
Plate 1A	Proposed Surface Facility Map (Phase 2)
Plate 2	Drainage Map
Plate 3A	Sediment Pond C
Plate 3B	Sediment Pond E
Plate 3C	Sediment Pond F
Plate 3D-a	Sediment Pond G-1 (Phase 1)
Plate 3D	Sediment Pond G (Phase 2)
Plate 3E	Sediment Pond H
Plate 3F	Sediment Pond I
Plate 3G	Permanent Impoundment
Plate 3H	Depression Area
Plate 4	Deleted
Plate 5	Deleted
Plate 6	Deleted
Plate 7	Deleted
Plate 8	Reclamation Hydrology
Plate 9	Final Reclamation
Plate 10	Deleted
Plate 11	Soils Map
Plate 12	Geology Map
Plate 13A	Topsoil Piles
Plate 13B	Topsoil Piles
Plate 13C	Topsoil Salvage Areas

Plate 14	Deleted
Plate 15	Watershed Map
Plate 16	Surface and Subsurface Ownership Map
Plate 17	Typical Road Cross-sections
Plate 18	Deleted
Plate 19	Deleted
Plate 20	Deleted
Plate 21	Deleted
Plate 22	Proposed Expansion
Plate 23	Cut/Fill Locations
Plate 24	Pad Area Cut/Fill
Plate 25	Pad Area Cut/Fill
Plate 26	Pad Area Cut/Fill
Plate 27	Truck Loop Cut/Fill
Plate 28	Refuse Fill Proposed Location
Plate 29	Vegetation Map

ANDALEX RESOURCES, INC.

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 1, LEGAL

CHAPTER 1, LEGAL

NOTE TO REVIEWERS: The Wildcat MRP was recently re-formatted to the newer R645 regulations. This reformatted MRP was recently approved and incorporated on May 17, 2006. The current amendment is referred to as the 2008 Modification Plan and consists of three components, namely; 1) addressing Division Order DO-04 regarding wind-blown fines, 2) expanding the primary coal storage pad by about 3.5 acres, and 3) provide for a new material storage area of about 6 acres located on the west side of the facility.

Because the Wildcat MRP was recently reformatted and approved, every effort has been made in this amendment to minimize text changes, as pertains to responses to specific regulations, except where necessary to avoid inconsistencies and contradictions, and to make the response germane to the inclusion of the 2008 Modification Plan. Where appropriate, response to individual regulations regarding the proposed 2008 Modification Plan amendment includes reference to Appendix S. This appendix contains a detailed description of the amendment and is presented in a narrative that integrates the various components which are normally addressed in the separate chapters. Within the chapters themselves, all new discussion relevant to the 2008 Modification Plan amendment is presented in italics to easily differentiate it from the previously approved and reformatted text. The submittal also utilizes the standard "redline/strike-out" to aid in the review.

R645-301-100. GENERAL

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

Legal, Financial, Compliance and Information

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

Compliance Information

a) Suspension and Revocation

Andalex Resources, Inc., affiliates or persons controlled by or under common control with Andalex haven't had a mining

permit suspended or revoked within the last five years.

b) Forfeiture of Bond

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

c) History of Violations

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

R645-301-111. INTRODUCTION

Introduction and Overview of Project Permit Application

A. Introduction

This permit application is being submitted by Andalex Resources, Inc., in order that coal can be stored and loaded out of it's coal loadout facility located at Wildcat Junction, near Helper, Utah. This facility is known as the Wildcat Loadout. Andalex is a corporation organized and existing under the laws of the state of Delaware and qualified to do business in Utah. Andalex Resources has a permit to operate it's coal loading and storage facility known as Wildcat Loadout, in accordance with the appropriate regulations. This coal loadout facility is located on land owned by the United States of America in Carbon County, Utah.

Andalex was granted the right-of-way in January, 1982, by the Bureau of Land Management of the United States Department of the Interior. Andalex Resources, the designated operator, along with AMCA Coal Leasing, Inc., its' land acquisition and development branch, control all lands within the proposed coal loadout facility area. Andalex Resources, Inc., has therefore prepared this coal loadout facility permit application rewritten under the R645 Coal Mining Rules format, for submission to the appropriate regulatory authorities for review and approval.

B. Overview and Summary of Project

Coal storage and loading activities at Wildcat started officially on April 2, 1985, when the first coal was

brought there for storage and eventual loadout, under a permit issued to Andalex Resources by the Bureau of Land Management, U.S. Department of the Interior. This coal loadout facility is located approximately three miles west of U.S. Highway 6, Consumer's Road, Helper, Utah, in Carbon County and can be more accurately described as parts of Section 33, Township 13 South, Range 9 East, S.L.B. & M. (please see Figure 1). The property contains approximately ~~100.19~~ 270 acres, of which 12.5 acres are under lease to the Utah Railway by the Bureau of Land Management. The serial number for this right-of-way is U-48027.

There are no perennial streams or bodies of water on the property. Water for culinary purposes is supplied by Price Municipal Corporation and hauled down to the facility using approved culinary tank trucks. The water is in turn stored in an approved culinary tank at the loadout.

Historically, coal loading activities had been the sole use for this permit area, even prior to being leased to Andalex Resources. This is evidenced by the fact that the soil survey of the area revealed that of the eight test holes, two completely lacked topsoil and one located along the tracks had approximately two feet of fine coal and no topsoil. Coal had been stored along the tracks for shipping purposes in the past. It is appropriately justifiable to conclude that Andalex's proposed use of the area for coal storage and loading activities will be fully compatible with its' previous use, and as such, no significant new disturbance of the area has occurred. Observations have shown that the previous land use consisting of wildlife habitat and migrations has not been interrupted. This is evidenced by repeated sightings of deer herds moving through the permit area. Other mammals and birds continue to use this area for their habitat. Access to the loadout and storage facility is by paved county and state roads, which are also maintained by the county and state.

Coal is hauled from the Centennial Mine, Genwal Resources, and West Ridge Mine. ~~All surface and support facilities necessary for present operations have been completed. There are no additions or modifications proposed at this time.~~ Aside from the DOGM permit, Andalex Resources has acquired all the necessary approvals, licenses, rights-of-way, and permits at both state and federal levels to conduct coal storage and loading operations on the plan area. The facility is designed to handle loading and crushing activities up to

5.5 million tons per year.

Upon cessation of coal loading activities, reclamation activities will commence in accordance with the plans outlined in this application. The land will be restored to a condition equal to or better than the premining condition, according to available technology.

This facility is located in an area where mining and it's related activities have been the main industry, and as a result, the surrounding communities are properly adapted. The labor supply is excellent and well trained. With all these considerations, coupled with the prudent management at Andalex, the Wildcat Coal Loadout Facility is a model operation in the Carbon County area with no significant environmental or socioeconomic impact.

C. Organization of Application

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

R645-301-112. IDENTIFICATION OF INTERESTS.

Identification of Interests

1. Permit Applicant

Andalex Resources, Inc.
Tower Division
P.O. Box 902
Price, Utah 84501
(801) 637-5385

2. Legal and Equitable Owners of Record

The addresses of owners of record are as follows:
Bureau of Land Management
Utah State Office
P.O. Box 45155
Salt Lake City, Utah 84145-0155
(801) 539-4017

Utah Railroad
P.O. Box 11608
Salt Lake City, Utah 84147
(801) 521-3447

Andalex Resources, Inc.
Tower Division

P.O. Box 902
Price, Utah 84501
(801) 637-5385

All land within the permit area in question is owned by the United States of America and is leased by the Utah Railroad Corporation and Andalex Resources, Inc.

3. Purchaser's of Record Under Real Estate Contracts

There are no purchasers of record under any real estate contracts of areas to be affected by surface operations and facilities of this loadout, and there are no purchasers of record under any real estate contracts of the coal to be loaded out.

R645-301-112.100. TYPE OF BUSINESS

Andalex Resources, a corporation organized and existing under the laws of Delaware and qualified to do business in Utah, operates the Wildcat Loadout Facility. This facility stores, processes and ships coal for various operations in the area. This mining permit application has been prepared by Andalex Resources and is being submitted for review and approval by the appropriate regulatory authorities.

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

Resident Agent who will accept service of process for Andalex Resources, Inc., Wildcat Loadout, ACT/007/033:

David Shaver
Andalex Resources, Inc.
Tower Division
P.O. Box 902
Price, Utah 84501

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

R645-301-112.300. OTHER THAN SINGLE PROPRIETORSHIPS

Andalex Resources, Inc., Tower Division, holds the exclusive coal operating interests in the permit area.

R645-301-112.310. OFFICERS AND SHAREHOLDERS

Refer to Appendix A, Part 1 for information on officers and shareholders.

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

Refer to Appendix A, Part 1 for ownership and control information.

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

A list of current and previous coal mining permits held by Andalex and its affiliates is included in Appendix A, Part 2.

R645-301-112.500. SURFACE AND MINERAL OWNERSHIP

All surface and subsurface areas contiguous to the permit area are owned by the United States. The name and address of the responsible authority representing the federal government is as follows:

Bureau of Land Management
Utah State Office
Federal Building
Salt Lake City, Utah 84111
(801) 524-3004

R645-301-112.600. ADJACENT SURFACE AND MINERAL OWNERSHIP

Refer to Plate 16 for adjacent surface and mineral ownership.

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

The Wildcat Loadout and Refuse Pile have the following M.S.H.A. I.D. Numbers:

Loadout	-	MSHA I.D. 42-01864
Refuse Pile	-	MSHA I.D. 1211-UT-09-01864-01

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

N/A

R645-301-113. VIOLATION INFORMATION

History of Violations

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

R645-301-113.100. COMPLIANCE INFORMATION

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

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

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

R645-301-113.110. SUSPENDED OR REVOKED PERMITS

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

R645-301-113.120. FORFEITED BONDS

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

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

N/A

R645-301-113.210 PERMIT AND BOND IDENTIFICATION

The following is a list of all other licenses and permits under applicable state and federal land use, air and water

quality, water rights, and health and safety laws and regulations held by Andalex Resources in order to operate its coal loading facility. These permits can also be found in Appendix B.

State:

1. 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 84116

   Reference I.D.: DOGM PRO 007/033

2. State of Utah
   Department of Health
   Division of Environmental Health
   150 West North Temple
   P.O. Box 2500
   Salt Lake City, Utah 84110

   - Air Quality Construction and Operation Permit
     Approved July 22, 1982

   - Water Quality - Sediment and Drainage
     Approved September 15, 1982

   - Septic and Culinary Plan (1)
     Approved April 1, 1982

3. Utah Division of Water Quality
   P.O. Box 144870
   Salt Lake City, Utah 84114-4870

   - UPDES Discharge Permit #UTG040007

Federal:

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

   - Right-of-Way
     Permit Number U-48027
     Granted January 12, 1982
     Amended February 5, 2007

2. U.S. Department of Labor
Mine Safety and Health Administration (M.S.H.A.)
P.O. Box 25367
Denver, Colorado 80225
(District 9)
Wildcat Loadout Facility I.D. 42-01864

R645-301-113.220. REGULATORY AUTHORITIES INVOLVED

See above

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

See above

R645-301-113.240. ADMINISTRATIVE OR JUDICIAL PROCEDURES

Appendix B

R645-301-113.250. CURRENT STATUS OF PROCEEDINGS

Appendix B

R645-301-113.300. LIST OF ALL VIOLATIONS NOTICES

Appendix B

R645-301-113.310. IDENTIFICATION OF VIOLATIONS

Appendix B

R645-301-113.320. DESCRIPTION OF VIOLATIONS

Appendix B

R645-301-113.330. LOCATION OF VIOLATIONS PROCEEDINGS

Appendix B

R645-301-113.340. STATUS OF VIOLATIONS PROCEEDINGS

Appendix B

R645-301-113.350. ACTIONS TAKEN TO ABATE VIOLATIONS

Appendix B

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

Andalex Resources, Inc.,currently holds approximately ~~100.19~~ *270* acres of federal land which contains the permit area. Andalex bases its' legal right to enter and conduct coal loading activities in the permit area pursuant to the language contained in the right-of-way, specifically the actual grant (amended) dated March 24, 1982, and amended February 5, 2007 *(see Appendix B-Part A-12A)*. This right-of-way was granted under the authority of the Federal Land Policy and Management Act of 1976 (90 Stat. 2776; 43 U.S.C. 1761, Sec. 501 (a)(7)). All valid rights existing on the date of this grant shall apply.

A right to enter and conduct loading activities on the approximately thirteen acres of the permit area leased to the Utah Railroad is contained in the private lease agreement between Utah Railroad and Andalex Resources in November, 1981.

The right-of-way *(and the permit area)* can be described as follows:

U-48027:

Salt Lake Base and Meridian, Utah Township 13 South, Range 9 East, Section 33, ~~NW¼SE¼, N½SW¼ SE¼, E½E½NE¼SW¼, E½NE¼SE¼SW¼, NE¼SE¼SE¼SW¼, NW¼SW¼SW¼SE¼, E½SE¼SW¼NE¼ and portions of N½NW¼NE¼SE¼, NE¼SW¼NE¼, SW¼SW¼NE¼, NW¼SE¼SW¼NE¼, W½NE¼SW¼, W½E½NE¼SW¼, W½E½SE¼SW¼~~ *NE¼SW¼NE¼, S½SW¼NE¼, E½SW¼, SE¼, containing 270 acres*

It is important to note that this is a non-exclusive areal right-of-way, and that there are numerous other equally valid rights-of-way which occupy much of this same area. For example, overlapping rights-of-ways exist for the Utah Railway tracks, the State Highway 139, the Carbon County Consumers Road, the by-pass road, the Trestle public road, Rocky Mountain Power 46 KV powerline, Phillip Petroleum's gas well and pipeline corridor, and Hidden Splendor shop facility. BLM determined the final 270 acre configuration in part to "square up" the boundary for administrative purposes. Being a non-exclusive right-of-way means there is no conflict among grantees, and no inherent liability from one grantee to the next, as long as each grantee's activities are within the terms of their respective right-of-way. Therefore, the SMCRA permit area for the Wildcat loadout has been delineated to coincide with the boundary of the BLM right-of-way U-48027 as described above.

~~In addition, there is a parcel of land 500 feet by 500 feet square whose southeast corner is located 990 feet east of the center of Section 33.~~
~~This Right-of-Way contains 91 acres, more or less.~~

R645-301-114.100. DOCUMENTATION

Appendix B

R645-301-114.200. SEVERED SURFACE AND MINERAL ESTATES

Appendix B

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

N/A

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

N/A

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

N/A

R645-301-114.300. ADJUDICATION OF PROPERTY RIGHTS DISPUTES

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

R645-301-115. STATUS OF UNSUITABILITY CLAIMS

N/A

R645-301-115.100. IDENTIFICATION OF LANDS UNSUITABLE

The permit area is not within an area designated unsuitable for the affects of mining activities, specifically, coal loading activities, under study for designation in an administrative proceeding initiated under those parts.

Further, there are no occupied dwellings within 300 feet of the permit.

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

None.

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

None.

R645-301-116. PERMIT TERM

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

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

See R645-301-142

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

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

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

N/A

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

N/A

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

USED IN COMMON

Appendix B contains certificates of liability insurance covering personal injury and property damage resulting from this operation.

R645-301-117.100. LIABILITY INSURANCE

Appendix B

R645-301-117.200. NEWSPAPER PUBLICATION

A copy of the newspaper advertisement of this Mining and Reclamation Plan and proof of publication of the advertisement is filed with the Division and made part of the complete application. (See Appendix B).

R645-301-117.300. FACILITIES USED IN COMMON

N/A

R645-301-118. FILING FEE

N/A

R645-301-120. PERMIT APPLICATION FORMAT AND CONTENTS

Summary of Table of Contents

R645-301-100. General

R645-301-200. Soils

R645-301-300. Biology

R645-301-400. Land Use and Air Quality

R645-301-500. Engineering

R645-301-600. Geology

R645-301-700. Hydrology

R645-301-800. Bonding and Insurance

R645-301-121. REQUIREMENTS

R645-301-121.100. CURRENT INFORMATION

Information is current.

R645-301-121.200. CLEAR AND CONCISE

Information is clear and concise.

R645-301-121.300. FORMAT REQUIREMENTS

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

Exhibits include appropriate supporting documents, reports and publications and are included as appendices.

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

R645-301-122. REFERENCED MATERIALS

All references and referenced publications and materials are listed under R645-301-130.

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

This permit is submitted to update information to the R645 permit format.

R645-301-130. REPORTING AND TECHNICAL DATA

Preparation of Application

A. Persons and Consultants Involved

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

1. In House Consulting Services

a) Andalex Resources, Inc., AMCA Coal Leasing, Inc.
Samuel C. Quigley - General Manager
Michael W. Glasson - Senior Geologist
David E. Shaver - Chief Engineer

2. Outside Consulting Services

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

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

c) Rollins, Brown, and Gunnell
Provo, Utah
- Foundation Study

d) Earl Jensen - Soil Scientist
Price, Utah

e) Roy Harniss - Range Scientist
Logan, Utah
- Vegetation Inventory

B. Coordination and Consultation with Governmental Agencies

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

U.S. Department of Agriculture
Soil Conservation Service
Price, Utah

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

Office of Surface Mining
Reclamation and Enforcement
Denver, Colorado

U.S. Fish and Wildlife Service
Salt Lake City, Utah

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

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

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

Department of Community & Economic Development
Division of State History
Salt Lake City, Utah

Department of Natural Resources
Division of Water Rights
Salt Lake City, Utah

Department of Health
Division of Environmental Health
Salt Lake City, Utah

C. References

Andalex Resources, Inc. 1987 - Mining and Reclamation Plan
Submitted to the State of Utah
Department of Natural Resources, D.O.G.M.

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

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

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

D. Bibliography

Barfield, B.J., Warner, R.C. and Haan, C.R. 1983. Applied Hydrology and Sedimentology for Disturbed Areas. Olkahoma Technical Press, Stillwater, 603 pp.

Cordova, R.M., 1964, "Hydrogeologic Reconnaissance of Part of Head Waters Area of the Price River, Utah", Utah Geological and Mineral Survey, Water Resources Bulletin 4, p. 26.

Fisher, D.J., Erdmann, C.E., and Reeside, J.B., 1960. "Cretaceous and Testing Formation of the Book Cliffs, Carbon, Emery, and Grand Counties, Utah, and Garfield and Mesa Counties, Colorado", U.S. Geological Survey, Professional Paper 332, p. 80.

Price, D. and Arnow, T., 1974. Summary Appraisals of the Nation's Ground Water Resources - Upper Colorado Region. U.S. Geological Survey Professional Paper 813-C, 40 pp.

Spieker, Edmond M., 1931. Wasatch Coal Field, Utah. U.S. Geological Survey, Bulletin 819.

U.S. Bureau of Reclamation, 1977. Design of Small Dams, U.S. Government Printing Office, Washington, D.C., 816 pp.

Waddell, K.M., and other, 1981. Hydrologic Reconnaissance of the Wasatch Plateau, Book Cliffs Field Areas, Utah. U.S.G.S. Water Supply Paper 2068.

R645-301-131. TECHNICAL DATA REQUIREMENTS

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

R645-301-132. TECHNICAL ANALYSES REQUIREMENTS

Analyses are prepared by a qualified professional engineer.

R645-301-140. MAPS AND PLANS

Per Division Requirement.

R645-301-141. MAP FORMATS

Per Division Requirement.

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

Introduction and Overview of Project Permit Application

This permit application is being submitted by Andalex Resources, Inc., in order that coal can be stored and loaded out of its' coal loadout facility located at Wildcat Junction, near Helper, Utah. This facility is known as the Wildcat Loadout. Andalex is a corporation organized and existing under the laws of the state of Delaware and qualified to do business in Utah. Andalex Resources hereby seeks the permit to operate its' coal loading and storage facility known as Wildcat Loadout, in accordance with the appropriate regulations. This coal loadout facility is located on land owned by the United States of America in Carbon County, Utah.

Andalex was granted the right-of-way in January, 1982, by the Bureau of Land Management of the United States Department of the Interior. *The right-of-way was subsequently amended on February 5, 2007.* Andalex Resources, the designated operator, along with AMCA Coal Leasing, Inc., its' land acquisition and development branch, control all lands within the proposed coal loadout facility area. Andalex Resources, Inc., has therefore prepared this coal loadout facility permit application for submission to the appropriate regulatory authorities for review and approval.

Coal storage and loading activities at Wildcat started officially on April 2, 1985, when the first coal was brought there for storage and eventual loadout, under a permit issued to Andalex Resources by the Bureau of Land Management, U.S. Department of the Interior. This coal loadout facility is located approximately three miles west of U.S. Highway 6, Consumer's Road, Helper, Utah, in Carbon County and can be more accurately described as parts of Section 33, Township 13 South, Range 9 East, S.L.B. & M. (please see Plate 1). The property contains approximately ~~100.19~~ *270* acres, of which 12.5 acres are under lease to the Utah Railway by the Bureau of Land Management. The serial number for

this right-of-way is U-48027.

There are no perennial streams or bodies of water on the property. Water for culinary purposes is supplied by Price Municipal Corporation and hauled down to the facility using approved culinary tank trucks. The water is in turn stored in an approved culinary tank at the loadout.

Historically, coal loading activities had been the sole use for this permit area, even prior to being leased to Andalex Resources. This is evidenced by the fact that the soil survey of the area revealed that of the eight test holes, two completely lacked topsoil and one located along the tracks had approximately two feet of fine coal and no topsoil. Coal had been stored along the tracks for shipping purposes in the past. It is appropriately justifiable to conclude that Andalex's proposed use of the area for coal storage and loading activities will be fully compatible with its' previous use, and as such, no significant new disturbance of the area has occurred. Observations have shown that the previous land use consisting of wildlife habitat and migrations has not been interrupted. This is evidenced by repeated sightings of deer herds moving through the permit area. Other mammals and birds continue to use this area for their habitat. Access to the loadout and storage facility is by paved county and state roads, which are also maintained by the county and state.

Coal is hauled from the Centennial Mine, Genwal Resources and West Ridge Mine. All surface and support facilities necessary for present operations have been completed. There are no additions or modifications proposed at this time, *other than those associated with the 2008 Modification Plan described in Appendix S.* Aside from the DOGM permit, Andalex Resources has acquired all the necessary approvals, licenses, rights-of-way, and permits at both state and federal levels to conduct coal storage and loading operations on the plan area. The facility is designed to handle loading and crushing activities up to 5.5 million tons per year.

Upon cessation of coal loading activities, reclamation activities will commence in accordance with the plans outlined in this application. The land will be restored to a condition equal to or better than the premining condition, according to available technology.

This facility is located in an area where mining and

its' related activities have been the main industry, and as a result, the surrounding communities are properly adapted. The labor supply is excellent and well trained. With all these considerations, coupled with the prudent management at Andalex, the Wildcat Coal Loadout Facility is a model operation in the Carbon County area with no significant environmental or socioeconomic impact.

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

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

R645-301-142.200. AFTER AUGUST 3, 1977

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

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

See R645-301-142.100.

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

N/A

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

N/A

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

A list of all applicable permits is included in Appendix B.

R645-301-150. COMPLETENESS

Per Division.

ANDALEX RESOURCES, INC.

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 2, SOILS

CHAPTER 2

TABLE OF CONTENTS

R645-301-200.	SOILS	2-1
R645-301-211.	PREMINING SOIL RESOURCES	2-2
R645-301-212.	STOCKPILING AND REDISTRIBUTION . . .	2-2
R645-301-220.	ENVIRONMENTAL DESCRIPTION	2-8
R645-301-221.	PRIME FARMLAND INVESTIGATION	2-8
R645-301-222.	SOIL SURVEY	2-8
R645-301-223.	SOIL CHARACTERIZATION	2-9
R645-301.224.	SUBSTITUTE TOPSOIL	2-9
R645-301-230.	OPERATION PLAN	2-12
R645-301-231.	GENERAL REQUIREMENTS	2-12
R645-301-232.	TOPSOIL AND SUBSOIL REMOVAL	2-12
R645-301-233.	TOPSOIL SUBSTITUTES AND SUPPLEMENTS .	2-14
R645-301-234.	TOPSOIL STORAGE	2-15
R645-301-240.	RECLAMATION PLAN	2-16
R645-301-241.	GENERAL REQUIREMENTS	2-27
R645-301-242.	SOIL REDISTRIBUTION	2-28
R645-301-243.	SOIL NUTRIENTS AND AMENDMENTS	2-29
R645-301-244.	SOIL STABILIZATION	2-29
R645-301-250.	PERFORMANCE STANDARDS	2-29
R645-301-251.	SOIL REMOVAL	2-29
R645-301-252.	SOIL STORAGE AND REDISTRIBUTION . . .	2-30

CHAPTER 2, SOILS

NOTE TO REVIEWERS: The Wildcat MRP was recently re-formatted to the newer R645 regulations. This reformatted MRP was recently approved and incorporated on May 17, 2006. The current amendment is referred to as the 2008 Modification Plan and consists of three components, namely; 1) addressing Division Order DO-04 regarding wind-blown fines, 2) expanding the primary coal storage pad by about 3.5 acres, and 3) provide for a new material storage area of about 6 acres located on the west side of the facility.

Because the Wildcat MRP was recently reformatted and approved, every effort has been made in this amendment to minimize text changes, as pertains to responses to specific regulations, except where necessary to avoid inconsistencies and contradictions, and to make the response germane to the inclusion of the 2008 Modification Plan. Where appropriate, response to individual regulations regarding the proposed 2008 Modification Plan amendment includes reference to Appendix S. This appendix contains a detailed description of the amendment and is presented in a narrative that integrates the various components which are normally addressed in the separate chapters. Within the chapters themselves, all new discussion relevant to the 2008 Modification Plan amendment is presented in italics to easily differentiate it from the previously approved and reformatted text. The submittal also utilizes the standard "redline/strike-out" to aid in the review.

R645-301-200. SOILS

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

1. Introduction

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

Regarding the 2008 Modification Plan, two separate soil surveys have been completed. James Nyenhuis, working for Mt. Nebo Scientific, completed a survey of the general

area proposed for the coal pad expansion/drop zone in 2003 (see Appendix D Supplement). In 2007, Priscilla Burton, DOGM, conducted a soil survey of the proposed material storage area (see Appendix D Supplement). Both surveys determined that suitable topsoil material exists in this area to a depth of several feet. A more contextual discussion of the topsoil resources of the 2008 Modification Plan project area can be found in Appendix S.

R645-301-211. PREMINING SOIL RESOURCES

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

Topsoil was removed prior to construction in 1984, and stored and protected for use in final reclamation. Please see Plate 13*C* for a summary of stored topsoil. Appendix D also includes a topsoil mass balance and includes soil quality data from the Utah State University Testing Laboratory. The mass balance indicates that there may not be sufficient volume of topsoil for final reclamation. Andalex has committed to identifying and testing for suitable substitute material either off the permit area or possibly within the permit area if a suitable growth medium can be identified.

Under the 2008 Modification Plan, Andalex has committed to salvaging at least 24" of topsoil from the proposed new disturbed areas. This excess topsoil salvage is designed to minimize or eliminate the existing topsoil deficit. Refer to Plate 13C for table and map of the proposed and existing topsoil salvage areas and stockpiles, and the existing and proposed topsoil mass balance calculations. Refer to Appendix S for a contextual discussion about the topsoil mass balance associated with the 2008 Modification Plan. This revised plan demonstrates that there should be sufficient topsoil stockpiled for final reclamation after construction is completed.

R645-301-212. STOCKPILING AND REDISTRIBUTION

Removal and Storage of Topsoil and Subsoils

(Also the following sections: R645-301-230, 231.100, 231.400, 232, 234, 251 and 252)

The area from which topsoil was removed is approximately 20 acres (the surface area which was not previously impacted by loading operations prior to Andalex) and includes poorly developed soils. Using scrapers, the soil was scraped from the surface to a depth of approximately six inches and dumped at separate sites on the site. The topsoil storage areas are shown on Plate 1. No topsoil was gathered from ASCA portions of the permit area including the topsoil stockpile on the west side north of Pond F. All topsoil piles are to be considered ASCA exemptions (see Plate 2). This part of the permit area is where the topsoil piles were placed. Although soil studies indicate suitable material to a depth greater than six inches, Andalex needed to use this subsoil material for fill in the construction of their surface facilities. It should be noted that in several areas on the facility where excavations were made, piles of coal fines where uncovered in some cases up to six feet thick. This material was reclaimed and used as a base for Andalex's coal storage piles. However, no topsoil was available in these areas. 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. Topsoil has been segregated, stockpiled, and protected from wind and water erosion and contaminants through revegetation and the use of ditches. All topsoil piles are equipped with impermeable earthen berms. If over a period of time these berms become backfilled with soil as a result of minor erosion, Andalex will remove the material and place it back on the pile thereby maintaining the berm protection at all times. Likewise, substitute topsoil sites, once identified, will be protected with vegetation. Samples were taken of all the topsoil piles to determine whether the material which was gathered is suitable for final reclamation. This analysis is included in Appendix D. Andalex is willing to commit to any necessary steps to insure that the topsoil material is suitable for final reclamation such as the use of additives, fertilizer, etc. Andalex suggests that the topsoil be tested prior to final reclamation as conditions in the piles may change over the next fifteen to twenty years. Parameters that are being analyzed are pH, Ec, saturation percent, texture, organic C, SAR, Total N, available P, percent $CaCO_3$, Selenium, and Boron. Disturbed areas no longer required for the conduct of mining operations have been graded and revegetated. Once the topsoil was removed, the areas were graded to accommodate the surface facilities. Andalex submitted plans to modify the disturbed area boundary and to increase the capacity of the Wildcat Loadout. This

proposal included plans to relocate three of the topsoil piles on the east side of the permit area. These topsoil piles (B, C, D) have been moved to the west side of Wildcat where they are protected from additional wind-carried coal fines. The new pile has been renamed Topsoil Pile "B". After these piles were relocated, they also were reseeded once again with an interim seed mixture which will provide further protection from erosion. For further information about topsoil, please see Appendix D.

There are presently 4 topsoil stockpiles on this site.

Topsoil Pile Summary, Existing		
Topsoil Pile A	11,877 $ft.^3$	
Topsoil Pile B	285,810 $ft.^3$	
Topsoil Pile E	122,176 $ft.^3$	
Topsoil Pile F	44,363 $ft.^3$	
Total	464,499 $ft.^3$	(17,204 CY)

Topsoil piles B, C and D have been moved away from the coal storage piles to the west side of Wildcat where they will no longer be subjected to wind-borne coal fines(Existing Topsoil Pile "B"). These piles represent a total volume of 285,770 ft^3. The new topsoil pile is a long, narrow pile situated adjacent to the existing topsoil pile on the west side. The new pile is approximately 10 feet in height, 75 feet wide and 500 feet long. Slopes on the topsoil pile do not exceed 2V:1H. A containment berm has been constructed around the perimeter of the pile to a minimum height of two feet. Surface area and surface roughness have been maximized to allow microbial activity and organic matter cycling. The new topsoil pile, was reseeded between October 1 and October 14, 1994, broadcasting the following pure live seed mixture or drill seeding at half the specified rate.

Fairway crested wheatgrass	4 lb/ac
Bozoisky Russian wildrye	4 lb/ac
Arriba Western wheatgrass	4 lb/ac
Nezpar Indian ricegrass	4 lb/ac
Critana thickspike wheatgrass	4 lb/ac
Forage Kochia	4 lb/ac
Rincon Fourwing saltbush	4 lb/ac
Shadscale	2 lb/ac
Gordon Creek Wyoming sagebrush	.5 lb/ac
Castle Valley Gardner saltbush	2 lb/ac

Areas where topsoil has been moved will be drill seeded with the approved mixtures or hand broadcast at 1-1/2 times the specified rate. Andalex proposes the use of several techniques in order to measure revegetation success. These will include the use of non-weedy alfalfa mulch at the rate of three to four tons per acre as well as excelsior matting and chicken wire for erosion control. Mulch will be crimped in on the topsoil pile and in the areas previously designated as undisturbed a light application of water will be applied immediately after seeding. It should be noted that prior to revegetation of the areas previously designated as undisturbed coal fines were vacuumed to the extent possible. Also, if deemed necessary in future years, coal fines will be vacuumed in areas where revegetation could potentially be affected adversely.

It should be noted that areas from which topsoil piles were removed and on the area where fill material was borrowed additional topsoil was gathered to a depth of twelve inches and placed on the new topsoil storage pile on the west side.

Refer to Plate 1 and 1A for detailed map delineation of the existing and proposed disturbance associated with the 2008 Modification Plan. Refer to Plate 13C for a map of the areas of topsoil salvage areas and stockpiles proposed under the 2008 Modification Plan. Refer to Appendix S for a contextual discussion about the removal and storage of topsoil associated with the 2008 Modification Plan. This revised plan demonstrates that there should be sufficient topsoil stockpiled for final reclamation after construction is completed.

The additional areas to be disturbed as part of the 2008 Modification Plan include the following:

1)	*Existing disturbed operational area*	*59 15 ac.*
1a)	*Existing topsoil pile area*	*1.79 ac.*
	Total existing disturbed area	*60.94 ac.*
2)	*Extended coal storage area/drop zone*	*6.71 ac.*
3)	*Material storage area*	*6.29 ac.*
4)	*New sediment ponds/ditches*	*3.18 ac.*
5)	*New topsoil piles*	*4.67 ac.*
	Total new (2007 MP) disturbance	*20.85 ac.*
	Total disturbed area	*81.79 ac.*

(Operational areas to be re-topsoiled 75.33 ac.)
(Areas of topsoil piles) 6.46 ac.)

Backfilling, Grading, and Soil Replacement and Stabilization (Also R645-301-232.400)

All disturbed areas will be backfilled and graded to as near as possible the approximate original contour with the exception of the natural drainage which came through the loadout site prior to Swisher Coal Company's establishment of their loadout facility. Andalex has diverted this natural drainage and will provide permanent protection of this diversion once reclamation is complete. Please refer to ~~Chapter 5~~ *Appendix R*, re Undisturbed Diversions for more detail. 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. This is a flat lying area and therefore stabilization should be achieved easily.

Areas which will be backfilled include foundation areas such as the loadout, the reclaim tunnels (including the expanded reclaim system), and the truck dumps. All backfilled and regraded areas, including the Wildcat Expansion areas, will be reclaimed. Areas to be regraded include the loadout site, stockpile sites, and roads. These areas can all be regraded simultaneously because of the simple topography of the area. Where possible, all final grading and placement of topsoil will be done along the contour to minimize erosion.

In all cases, grading will be conducted in a manner which minimizes erosion and provides a stable surface for the placement of topsoils.

Upon reclamation, topsoil will be hauled to the area by end dump trucks, piled and spread using a grader. Where possible, the soil will be distributed along the contour. The thickness of the re-established soil will be consistent with soils in the vicinity and will be sufficient to support vegetation equal to or superior to pre-mining history. As previously mentioned, Andalex was unable to gather topsoil because of the previous disturbance. However, Andalex has committed to identifying and testing topsoil substitute areas either within or outside of the permit area as needed so that upon final reclamation, the entire disturbed area of approximately ~~60.94~~ *75.33* acres can be resurfaced with

six inches of topsoil or less if allowed by the Division (please see Plate 1 for the location of these topsoil substitute areas. They are identified on Plate 1 as revegetation test plots.) Existing topsoil piles on site total approximately 464,499 cubic feet (17,204 cubic yards)of material. Andalex feels and it is apparent from the soils inventory, that much of the fill material used onsite could be used as topsoil substitute. As previously mentioned, four topsoil substitute areas have been identified and are shown on Plate 1. Soil samples from these locations have been analyzed and the results are included in Appendix N. Once it has been determined that the substitute material is suitable for reclamation purposes, the actual area of substitute material will be carefully outlined on Plate 1 and the volumes included in the Topsoil Pile Summary. These areas have been protected from wind and water erosion through revegetation using the currently approved seed mixture. Please refer to Appendix D for the specific methods for this revegetation and monitoring. Revegetation of all existing topsoil piles will be accomplished in the same manner as the substitute piles (revegetation test areas). The only area which will not be subject to topsoil redistribution will be the ASCA's, where topsoil was not stripped, the Utah Railway tracks, the Permanent Impoundment, and Diversion UD-1.

It should be noted that when rills or gullies deeper than nine inches form in areas that have been regraded or topsoiled, the rills and gullies will be filled, graded, or otherwise stabilized and the area reseeded or replanted. Rills and gullies of lessor size will be stabilized and the area reseeded or replanted if the rills or gullies are disruptive to the approved postmining land use or result in additional erosion and sedimentation.

At any time a slide occurs which may have a potential adverse effect on public, property, health, safety, or the environment, Andalex Resources shall notify the Division by the fastest available means and comply with any remedial measures required by the Division.

Refer to Appendix S for information about the topsoil replacement associated with the 2008 Modification Plan. This revised plan demonstrates that there should be sufficient topsoil stockpiled for final reclamation after construction is completed.

R645-301-220. ENVIRONMENTAL DESCRIPTION

Appendix D

R645-301-221. PRIME FARMLAND INVESTIGATION

Appendix D

R645-301-222. SOIL SURVEY

Appendix D

Regarding the 2008 Modification Plan, two separate soil surveys have been completed. James Nyenhuis, working for Mt. Nebo Scientific, completed a survey of the general area proposed for the coal pad expansion/drop zone in 2003 (see Appendix D Supplement). In 2007, Priscilla Burton, DOGM, conducted a soil survey of the proposed material storage area (see Appendix D Supplement). Both surveys determined that suitable topsoil material exists in this area to a depth of several feet. A more contextual discussion of the topsoil resources of the 2008 Modification Plan project area can be found in Appendix S.

R645-301-222.100. SOIL MAP

Plate 11

R645-301-222.200. SOIL IDENTIFICATION

Appendix D

R645-301-222.300. SOIL DESCRIPTION

Appendix D

R645-301-222.400. SOIL PRODUCTIVITY

Appendix D

R645-301-223. SOIL CHARACTERIZATION

Appendix D

R645-301-224. SUBSTITUTE TOPSOIL

(Also the following: R645-301-231.200, 231.300, 232.720

and 233)

Andalex has identified four different locations within the permit area to be used for revegetation test plots. These areas are all located on slopes of fill material created during the construction of the site. The object of these test areas is to determine whether or not all of the fill material within the permit area may be used as substitute topsoil for final reclamation purposes. The test plot locations are shown on Plate 1 designated A, B, C & D, and are located in such a fashion so as to cover the various types of fill material throughout the entire permit area. It is doubtful that the different fill areas vary with respect to chemical constituants or reclamability; however, the revegetation test plots will prove or disprove this theory. It is Andalex's goal to demonstrate that any of the fill material may be used as topsoil substitute and thereby mitigating the shortfall of topsoil gathered due to previous disturbance on site. Based on the area to be reclaimed versus the volume of topsoil currently gathered and in piles, Andalex requires that an additional 31,954 cubic yards of substitute material be identified.

These four locations were treated according to discussions and commitments between Andalex and the Division in the fall of 1989. The treatment included fertilizing, tilling, mulching (weedless alfalfa hay) and seeding. Andalex agreed to quantitatively analyze these areas after two growing years and conducted the survey in the summer of 1992 and 1993. The results of the survey are found in Appendix N. Andalex will perform one more quantitative test on these plots in the summer of 2006. Andalex recommends that the consultant perfoming the survey be asked for an opinion as well. These techniques may include different bed preparation; using native, local seed; and different fertilizing techniques, indluding no fertilizer.

In the unlikely event it is determined that the fill material is not suitable for topsoil substitute, Andalex will commit to further discussing solutions with the Division, or locating offsite topsoil substitute material. This will have to be accomplished in conjunction with a new Bureau of Land Management right-of-way issued for this purpose; therefore, it is hoped that the fill material proves suitable.

In addition to these revegetation test plots, in 1994, Andalex created four new test plots on the surface of the new topsoil storage piles located on the west side of the

tracks adjacent to existing topsoil pile E.

These test plots will be approximately 40 feet square and will not be situated on any of the slopes of the topsoil pile. All four test plots will have a roughened surface (roughened meaning troughs and hills between one and four feet in height). Also, all four test plots, along with the remainder of the surface of the topsoil pile will be mulched and have incorporated one ton of weed-free alfalfa hay per acre (the alfalfa will be tested by the Utah State University Agricultural Extension Service). The seed mixture to be used on all of the test plots, as well of the remainder of the topsoil pile is listed on Page 2-4 of this Plan. Seeding will occur no later than October 14, 1994. Seeding will be by hand-broadcasting and will not be raked if the surface is in a loose condition and not crusted.

Test Plot 1 - Test Plot 1 will not be irrigated; it will be mulched with three to four-tons-per-acre of alfalfa hay in an effort to retain natural moisture. The alfalfa hay will be incorporated into the surface so as not to attract deer.

Test Plot 2 - Test Plot 2 will be irrigated. Irrigation will be accomplished through the use of soaker hoses or fine-mist spray according to the following schedule:

In terms of inches of water, the initial profile wetting will be one inch which will occur in the Spring of 1995, approximately April 1. Irrigation will proceed at the rate of one inch every four days for four to six weeks (assuming lack of natural precipitation). Following this, the plot will be irrigated with one inch of water every two weeks until the end of the season, approximately mid-September, 1995. In addition, Test Plot 2 will be covered with North American Green Straw matting, which will be stapled adequately to the surface. The matting which is planned for use will have netting on one side only.

Test Plot 3 - Test Plot 3 will be irrigated in the same fashion of Test Plot 2. In addition, Test Plot 3 will have 1.5 tons-per-acre straw applied and achored with biodegradable netting.

Test Plot 4 - Test Plot 4 will not be irrigated. In addition to the one-ton-per-acre alfalfa mulch this test plot will be covered with 1.5 tons-per-acre oat or barley straw. This straw will also be covered with a biodegradable mesh which will be stapled to the surface.

It should be noted these test plots were last monitored in 1997, and at that time, showed that they can be revegetated. No further monitoring of these test plots is proposed.

Regarding the 2008 Modification Plan, there should be sufficient topsoil stockpiled for final reclamation after construction is completed. However, the substitute topsoil plan described above shall remain in the approved plan until after the 2008 Modification Plan construction has been completed and a final as-built determination of the actual topsoil stockpile quantity has been determined. Refer to Appendix S for a contextual discussion of the topsoil salvage and stockpiling proposal associated with the 2008 Modification Plan. Also, refer to Plate 13C for a map and chart of the existing and proposed topsoil salvage and stockpile locations.

R645-301-230. OPERATION PLAN

See R645-301-212

R645-301-231. GENERAL REQUIREMENTS

NOTE: Refer to Appendix S and Plate 13C for detailed information about topsoil removal, testing, handling, segregation, quality, and storage associated with the 2008 Modification Plan. All topsoil removal, handling, storage done under this proposal will be done in accordance with the approved plan.

R645-301-231.100. REMOVAL AND STORAGE

See R645-301-212

R645-301-231.200. SUITABILITY OF TOPSOIL SUBSTITUTES

See R645-301-224

R645-301-231.300. TESTING PLAN

See R645-301-224

R645-301-231.400. TOPSOIL HANDLING AND STORAGE AREAS

See R645-301-212

R645-301-232. TOPSOIL AND SUBSOIL REMOVAL

See R645-301-212

R645-301-232.100. TOPSOIL SEGREGATION

See R645-301-212

R645-301-232.200. INSUFFICIENT QUANTITY OR POOR QUALITY

See R645-301-224

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

N/A

R645-301-232.400. TOPSOIL REMOVAL FOR MINOR DISTURBANCES

N/A

R645-301-232.410. SMALL STRUCTURES

N/A

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

See R645-301-212

R645-301-232.500. SUBSOIL SEGRETATION

N/A

R645-301-232.600. TIMING

All post-law disturbed area soils have been removed and stockpiled. ~~There are no plans to disturb additional areas at this time.~~

NOTE: Under the 2008 Modification Plan additional topsoil would be salvaged. Refer to Appendix S and Plate 13C for information about the additional disturbance associated with the 2008 Modification Plan. Implementation of this

plan (i.e., construction) is proposed for the summer of 2007.

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

N/A

R645-301-232.710. IMPRACTICABILITY

N/A

R645-301-232.720. IMPORTING TOPSOIL MATERIAL

See R645-301-224

R645-301-233. TOPSOIL SUBSTITUTES AND SUPPLEMENTS

See R645-301-224

R645-301-233.100. SELECTED OVERBURDEN MATERIALS

See R645-301-224

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

See R645-301-224

R645-301-233.300. PHYSICAL AND CHEMICAL ANALYSES

Appendices D and N.

NOTE: Refer to Appendix D Supplement for information on the physical and chemical analyses of topsoil associated with the 2008 Modification Plan. Refer to Appendix S for additional discussion of the topsoil resources associated with the 2008 Modification Plan.

R645-301-233.310. SCS PUBLISHED DATA

Appendix D

R645-301-233.320. SCS TECHNICAL GUIDES

Appendix D

R645-301-233.330. OTHER PUBLISHED DATA

Appendix D

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

See R645-301-212 and Appendix N.

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

See R645-301-224

R645-301-234. TOPSOIL STORAGE

See R645-301-212

R645-301-234.100. STOCKPILING AND REDISTRIBUTION

See R645-301-212

R645-301-234.200. STOCKPILING REQUIREMENTS

See R645-301-212

R645-301-234.210. PLACEMENT

See R645-301-212 and Plate I

R645-301-234.220. PROTECTION

See R645-301-212

R645-301-234.230. VEGETATIVE COVER

See R645-301-212

R645-301-234.240. REHANDLING

See R645-301-212

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

See R645-301-212

R645-301-234.310. CAPABILITY OF HOST SITE

See R645-301-212

R645-301-234.320. SUITABILITY FOR REDISTRIBUTION

See R645-301-212 and R645-301-224

R645-301-240. RECLAMATION PLAN

Timetable for Major Reclamation Steps

Introduction

NOTE: The presently approved reclamation plan for the Wildcat Loadout (as of May 17, 2007) involves two phases. Essentially the plan calls for performing nearly all the reclamation in Phase I, except for leaving in several sediment ponds until re-vegetation standards have been met, then removing the remaining ponds in Phase II, and then seeking bond release after the reclaimed pond areas have met the re-vegetation standards. This is the plan that was originally adopted when the Mining and Reclamation Plan was initially approved in 1989. Since that time there has been an accumulated history of mine reclamation involving the numerous central Utah coal operations. Based on that intervening experience the prevailing view of reclamation is that Phase II (i.e., retaining the sediment ponds as the final stage of reclamation) is perhaps counter-productive, and that better results are usually obtained by roughening the reclaimed surface to provide post-reclamation sediment control rather than utilizing the left-over ponds. This is especially true in areas such as Wildcat which are essentially flat and erosion is generally not much of a concern, and where there are no significant drainages running through the area to be reclaimed. Therefore, as part of the 2008 Modification Plan, Andalex proposes to modify the reclamation plan by eliminating the Phase II concept. The following description of the reclamation plan is the same as the approved version in every respect other than elimination of the Phase II "retained sed pond" concept.

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

When buildings and final site preparation was completed, the topsoil was revegetated to prevent erosion.

When the project is expired, perhaps in 30 years, extraneous material will be removed. Roads will be regraded and using the most advanced technology at the time, Andalex will re-establish the terrain to as nearly the original as practical.

Reclamation Timetable

Reclamation ~~will be accomplished in two phases. Phase I~~ will commence immediately after the project has expired. ~~Phase I involves the majority of the reclamation steps. It will bring the site to nearly complete with the exception of sedimentation ponds which will be left in place until revegetation has been determined complete. Prior to revegetation being complete, there is a possibility for runoff within the disturbed area to accumulate a sediment load. These ponds left in place will prevent this runoff from leaving the disturbed area. Once the vegetation has been established which will probably take a minimum of two years, Phase II of the reclamation will commence. This phase involves the removal of the four sediment ponds which were left, regrading, and revegetating these areas, and finally, Andalex's commitment to monitoring.~~

~~Phase I~~

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

1. 14 x 60 Scale House Trailer
2. Truck Scales
3. Substation
4. Truck Dump (west side)*
5. Crushing Plant (west side)*
6. Radial Stacker (west side)*
7. Reclaim Tunnel (west side)
8. Loadout Conveyor (west side)*
9. Control Building (west side)
10. Truck Dump & Reclaim (2 each)
11. Conveyor T
12. Crusher and Screening Plant
13. Lump Coal Belt
14. Stoker Radial Stacker

15. Conveyor Y, Y-1
16. Main Radial Stacker (2 each)
17. Loadout Reclaim Tunnel, port supports, hoppers
18. Conveyor R
19. Loadout Tower
20. Miscellaneous (Guard Rails, Office, Water Tanks, Motor Control Centers)
21. Powerline
22. 40' x 40' Shop Building and foundation

* Portable

The next step will be to remove any coal remaining on the various storage areas. This will not amount to a large volume of material and it will either be hauled to an approved storage area off-site or it will be disposed of within the loadout permit area by burial. This will include the coal refuse pile currently stored at Wildcat. The refuse pile will be flattened and buried according to the reclamation plan regarding coal mine refuse (Chapter 5).

Once the coal has been removed, then the recontouring and regrading portion will commence. It is anticipated that the structure removal will take approximately one year to complete so at this point, we would be into the reclamation about thirteen months. The first step in the recontouring and regrading would be the removal of the culverts. They have been left in until this point so the disturbed area would drain properly. The recontouring would primarily involve the primary and secondary roads, the loadout pad, and the coal stockpile areas. The undisturbed diversion west of the facility would become permanent at this point and would be capable of passing a 100 year precipitation event. The original natural drainage could not be restored because of the Utah Railroad. This natural drainage has been either blocked or diverted for the last 30 years by predecessors to Andalex.

As part of the 2008 Modification Plan, Andalex Resources acquired aerial photography and digital mapping of the Wildcat Loadout Area. From this photography and mapping Andalex has been able to represent the site with topography on 2' countours. This mapping represents the "as-built" facility as of the spring of 2007. This topographic mapping in far more accurate than the original mapping upon which the presently approved MRP is based, which now consists of hand copied ink mylars. The new digital mapping is computer-generated and utilizes X-Y-Z co-ordinates. This electronic mapping is ideal for

determining comparative earthwork volumes, since new computer programs are capable of taking existing and proposed contour of the same area and accurately computing cut and fill volumes. This is more accurate than the older methods of determining volumes off of widely-spaced cross sections. Therefore, the 2008 Modification Plan amendment proposes to use this new method of computer-generated volumes for the purpose of determining earthwork volumes for final reclamation. Plate 9 is a revised reclamation map, which shows approximately 80,000 cubic yards of material will have to be moved in the process of recontouring and grading. This would replace the previous Mass Balance Summary with more current numbers reflecting the existing "as-built" site configuration versus the final reclamation configuration.

~~It is estimated by the cross sections that approximately 74,000???? cubic yards of material will have to be moved in this process of recontouring and grading (please see Tables II-1 and II-1A re Mass Balance Summary). This part of Phase I will include the removal of all ponds. B and E and establishing new drainages to Ponds A, C, and D. Recontouring will take one month.~~

TABLE II-1

Mass Balance Summary

	Cut	Fill
1 + 00	740.8	926.0
0 + 00	1,111.2	
1 + 00	3,333.6	
2 + 00	1,481.6	2,963.2
3 + 00	1,852.0	5,185.6
4 + 00		5,926.4
5 + 00	1,111.2	4,074.4
6 + 00		4,444.8
7 + 00		1,481.6
8 + 00	7,037.6	4,444.8
9 + 00	6,667.2	2,963.2
10 + 00	7,037.6	2,222.4
11 + 00	4,444.8	2,963.2
12 + 00	8,519.2	4,444.8
13 + 00	1,481.6	6,296.8
14 + 00		8,148.8
15 + 00	7,408.0	4,444.8
16 + 00	6,667.2	3,704.0
17 + 00	2,222.4	5,185.6
18 + 00	5,926.4	2,222.4
19 + 00	1,481.6	1,852.0
20 + 00		740.8
21 + 00	5,185.6	
Total	73,709.6	74,635.6

Note: Refer to Plate 14 for cross-section locations.

TABLE II-1A

Mass Balance
Expanded Wildcat Pad Cross Sections

	Cut	Fill
0+00 - 0+60	0	0
0+80	24.0	0
1+00	22.9	0
1+20	26.1	0
1+40	24.5	0
1+60	58.7	0
1+80 - 3+80	0	0
4+00	0	78.4
4+20	0	250.4
4+40	0	302.3
4+60	181.0	301.3
4+80	157.2	310.1
5+00	139.9	273.5
5+20	132.4	272.7
5+40	135.5	271.7
5+60	153.2	251.3
5+80	169.7	204.9
6+00	171.4	194.7
6+20	173.5	148.0
6+40	185.7	109.3
6+60	227.3	88.4
6+80	234.7	35.0
7+00	211.9	17.0
7+20	0	0
Totals	2,429.6	3,109.0
x 20% swell =	485.9	
	2,915.5	

Note: Refer to Plate 14 for cross-section locations.

At the request of the Division, no extraordinary compaction will be applied to the last few lifts during the recontouring/grading, to provide a relatively loose rooting zone of four feet. This loose application of fill will eliminate the need for ripping prior to topsoil placement. During this operation, if it is determined that additional sediment control measures are needed for the diversions leading to the four ponds, they will be put in at this time. These measures might include rock check dams or straw dikes.

The next steps ~~in Phase I~~ will not take place until the fall of whatever year we are in at this point. So far the project has taken 14 to 15 months. The next two steps in the process are topsoil redistribution, where additional substitute will be hauled in if necessary, and revegetation. Once the topsoil is spread, the area will be roughened by gouging, and the area will be hydroseeded and hydromulched. The entire revegetation procedure is described in this chapter.

Finally ~~in Phase I~~, monitoring will commence. Observations of revegetation success and slope stability will be observed. If any part of this is unsuccessful, corrective measures will be taken.

Since Andalex estimates a minimum of two years before vegetation has taken hold to prevent erosion, then the entire ~~Phase I~~ project will take at least 3-1/2 years.

~~Phase II~~

~~Phase II of the reclamation will commence as soon as the monitoring of Phase I allows.~~

~~All that is left at this point is the removal (recontouring) of Ponds A, C, D, and F and the removal of the field fence surrounding the permit area. Once the areas have been graded, they will be prepared with loose filling of the upper lifts, (as described in Phase I above), prior to topsoil redistribution. At this point, if it is not already the fall season, Andalex will wait before redistributing the topsoil and revegetating. The same methods for revegetation will be used as in the Phase I reclamation.~~

Monitoring will then continue until the release of the bond.

Please note that earthwork will be done ~~in both Phase I and II~~ as much as possible during the dry seasons to

avoid unnecessary erosion to the regraded areas. If dust becomes a problem, water will be used to control it.

Reclamation Cost and Bonding

A description of reclamation is provided in R645-301-542.400. Bond information and detailed costs are provided in Appendix B.

Soil Testing Plan and Soil Preparation

Where possible the soil will be distributed along the contour. Soil will be redistributed using dump trucks and graders. The thickness of the re-established soil will be consistent with the pre-mining conditions. As this facility was previously impacted by other loading operations, Andalex was unable to gather topsoil on these areas. This will require the use of topsoil substitute material for final reclamation. Andalex has chosen potential topsoil substitute material and is currently in the process of performing the necessary tests and monitoring to demonstrate that it is suitable (page 51). Twenty samples of potential substitute topsoil material have been sent to the Utah State University Soils Lab. There are four test plot locations, A through D (Plate 1), and samples at each location have been taken from 0-6", 6-12", 1-2', 2-3', & 3-4'. Samples will be taken from the new test area west of the railroad tracks at these same depths. All test plots, including the newest plot will be analyzed for: soil color, texture, pH, organic carbon, saturation percentage, alkalinity, electrical conductivity, calcium carbonate percentage, sodium absorption ratio, soluble potassium, magnesium, calcium, sodium, total nitrogen, available phosphorous, available water capacity, and percent rock fragments. The results can be found in Appendix N. Once any of the areas of substitute material have been determined suitable for reclamation, all or part of these areas will be carefully outlined on Plate 1 and the volumes necessary to make up the current topsoil deficit, will be included in the Topsoil Pile Summary. This will require approximately 31,954 additional cubic yards of material.

Under the 2008 Modification Plan, Andalex has committed to salvaging at least 24" of topsoil from the proposed new disturbed areas. This excess topsoil salvage is designed to minimize or eliminate the existing topsoil deficit. Refer to Plate 13C for table and map of the proposed and existing topsoil salvage areas and stockpiles, and the existing and proposed topsoil mass balance calculations. Refer to Appendix S for a

contextual discussion about the topsoil mass balance associated with the 2008 Modification Plan. This revised plan demonstrates that there should be sufficient topsoil stockpiled for final reclamation after construction is completed.

Prior to final reclamation, samples will be taken of the stored topsoil to determine any deficiencies which would affect the growth of newly revegetated areas. Any deficiencies will be corrected by adding to the soil chemical fertilizers, organic mulch, or any other substances recommended by the regulatory authority. Preparation techniques such as discing will be incorporated.

Species and Amounts of Seeds and Seedlings

A reference area has been established by Andalex and DOGM. The sagebrush/grass reference area was used in combination with a vegetation inventory to determine the final seed mixture and amounts of seed to be used for final reclamation.

The following seed mixture, was developed by Mt. Nebo Scientific in conjunction with the vegetation inventory and UDOGM comments.

Planting and Seeding Methods

All reclaimed areas will be stabilized by gouging prior to reseeding. The gouging will be done with a backhoe or trackhoe, and will consist of gouges at least 18" deep by 24" - 36" wide, spaced 6' - 10' apart. All areas will then be hydroseeded and hydromulched.

Mulching Techniques

Vegetative cover will be promptly re-established following cessation of mining activities to stabilize erosion. Re-seeding will occur during the first normal period for favorable growth following regrading. Mulch will be applied to all reseeded areas. Areas which are hydromulched will be done so using an organic type mulch at the rate of one ton per acre. Where hydroseeding and hydromulching occur, a tackifier will be added to both the seed and the mulch.

Mulch will be used wherever seeds are planted. All disturbed areas will be reseeded. These areas are shown on Plate 9 and constitute 60.94 acres. (Not including the Utah Railway tracks).

Wildcat Loadout Final Seed Mixture			
Scientific Name	**Common Name**	**PLS/A**	**Seeds Per**
Amelanchier utahensis	Utah serviceberry	7.00	4.15
Artemisia tridentata	Big sagebrush	0.06	3.44
Ceratoides lanata	Winterfat	5.00	6.31
Chrysothamnus nauseosus	Rubber rabbitbrush	0.30	2.75
Purshia tridentata	Bitterbrush	12.00	4.13
Archillea millefolium	Yarrow	0.05	3.18
Hedysatum boreale	Northern sweetvetch	8.00	6.17
Linum lewisii	Lewis flax	1.00	6.38
Penstemon palmeri	Palmer penstemon	0.50	7.00
Viguiera multiflora	Showy goldeneye	0.20	4.84
Bouteloua gracilis	Blue grama	0.60	9.79
Elymus spicatus	Bluebunch wheatgrass	2.50	8.03
Elymus trachycaulus	Slender wheatgrass	2.50	9.18
Hilaria jamesii	Galleta	2.50	9.13
Stipa comata	Needle-and-thread	3.00	7.92
Stipa hymenoides	Indian ricegrass	2.00	8.63
TOTALS		47.21	101.06

Wildcat Loadout Interim Seed Mixture			
Scientific Name	**Common Name**	**PLS/A**	**Seeds Per**
Archillea millefolium	Yarrow	0.30	19.08
Elymus Lanceolatus	Thickspike Wheatgrass	8.00	28.28
Elymus smithii	Western Wheatgrass	9.00	26.03
Elymus stachycaulus	Slender Wheatgrass	8.00	29.38
TOTALS		26.30	102.78

Management Practices, e.g., Irrigation, Pest, and Disease Control

No mechanical irrigation will be used because of the lack of water in the area. Vegetative growth will be subject to normal rainfall and winter snowfall. Vegetation will be protected from both wildlife and livestock by drift-fences until the reclaimed areas have been adequately re-established. Upon approval, the fences will be removed. Fences are already standing surrounding the permit area. Pesticides and herbicides will be used as necessary. Should any persistent pesticides be needed, the Division's approval will be obtained prior to their use.

Measures to Determine Success

Revegetation will be closely monitored. Areas which fail to support sufficient growth to stabilize conditions will be tested and reseeded until a proper cover is established. Physical examinations will be conducted to note any species which are not thriving or regenerating. If this occurs, species will be substituted at the recommendation of the regulatory authority. Any other species will be added at the time of reclamation upon recommendation of the regulatory authority. All reclaimed areas will be monitored and maintained by the constant observation of Andalex until the surety release is granted. This will include slope staking on any sloped areas.

Revegetation monitoring parameters to be measured are growth rate, plant density and percent cover. We would expect to monitor or supervise monitoring at least monthly during the first two growing seasons. From experience with interim revegetation at the minesite, we have learned that two growing seasons are needed to establish any success. After this we would know whether reclamation was progressing successfully.

Andalex is committed to quantitative sampling of reclamation cover, frequency and woody plant density during years 2, 3, 5, 9, and 10. Productivity will be sampled only during years 9 and 10. The reference area will be sampled during years 9 and 10.

R645-301-241. GENERAL REQUIREMENTS

R645-301-242. SOIL REDISTRIBUTION

Topsoil and or substitute topsoil is to be redistributed to a depth of 6-inches (or less as approved by the Division) across the entire ~~60.94~~ *75.33* acre disturbed area, as shown on Plate 13C

R645-301-242.100. CRITERIA FOR REDISTRIBUTION

The only criteria is that it will be redistributed to a depth of 6 inches (or a lessor amount as approved by the Division).

R645-301-242.110. UNIFORMITY AND CONSISTENCY

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

R645-301-242.120. PREVENTION OF COMPACTION

Once redistributed, unnecessary compaction from equipment will be avoided.

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

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

R645-301-242.200. REGRADING AND TREATMENT

Not applicable, unless unacceptable rills and gullies are observed. (See R645-301-212)

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

The 2-celled Permanent Impoundment will be left. The embankments are stable and vegetated. Details are discussed in Chapter 7 of this Permit.

R645-301-242.310. PREVENTION OF SEDIMENTATION

~~Sediment Ponds A, C, D and F will be left in place until revegetation standards are reached (Phase I).~~

Prevention of sedimentation will be primarily through surface roughening (gouging and pocking) which should be adequate considering the relatively flat nature of the site.

R645-301-242.320. OTHER METHODS OF STABILIZATION

Roughening/gouging will be the primary method of stabilization. Other methods may include mulching and rip-rap.

R645-301-243. SOIL NUTRIENTS AND AMENDMENTS

As needed to be determined through Phase I monitoring.

R645-301-244. SOIL STABILIZATION

See R645-301-242.

R645-301-244.100. EROSION CONTROL AND AIR POLLUTION

See R645-301-242.

R645-301-244.200. SOIL STABILIZING PRACTICES

See R645-301-242.

R645-301-244.300. RILLS AND GULLIES

See R645-301-212 and R645-301-242.

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

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

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

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

R645-301-250. PERFORMANCE STANDARDS

All performance standards will be adhered to.

R645-301-251. SOIL REMOVAL

See R645-301-212.

R645-301-252. SOIL STORAGE AND REDISTRIBUTION

See R645-301-212.

ANDALEX RESOURCES, INC.

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 3, BIOLOGY

CHAPTER 3

TABLE OF CONTENTS

R645-301-300.	BIOLOGY	3-1
R645-301-310.	INTRODUCTION	3-1
R645-301-311.	VEGETATIVE, FISH AND WILDLIFE RESOURCES	3-14
R645-301-312.	POTENTIAL IMPACTS	3-14
R645-301-313.	RESTORATION OR ENHANCEMENT	3-14
R645-301-320.	ENVIRONMENTAL DESCRIPTION	3-14
R645-301-321.	VEGETATION INFORMATION	3-15
R645-301-322.	FISH AND WILDLIFE INFORMATION	3-15
R645-301-323.	MAPS AND AERIAL PHOTOGRAPHS	3-16
R645-301-330.	OPERATION PLAN	3-16
R645-301-331.	MINIMIZING IMPACT AND SURFACE EROSION	3-17
R645-301-332.	IMPACTS OF SUBSIDENCE ON RENEWABLE RESOURCE LANDS	3-17
R645-301-333.	USING THE BEST TECHNOLOGY CURRENTLY AVAILABLE TO MINIMIZE DISTURBANCE AND IMPACT	3-17
R645-301-340.	RECLAMATION PLAN	3-18
R645-301-341.	REVEGATATION	3-18
R645-301-342.	FISH AND WILDLIFE	3-27
R645-301-350.	PERFORMANCE STANDARDS	3-28
R645-301-351.	GENERAL REQUIREMENTS	3-28
R645-301-352.	CONTEMPORNEOUS RECLAMATION	3-28
R645-301-353.	REVEGATATION: GENERAL REQUIREMENTS	3-28
R645-301-354.	REVEGETATION: TIMING	3-31
R645-301-355.	REVEGETATION MULCHING AND OTHER SOIL	

	STABILIZING PRACTICES	3-31
R645-301-356.	REVEGETATION: STANDARDS FOR SUCCESS . .	3-32
R645-301-357.	REVEGETATION: EXTENDED RESPONSIBILITY PERIOD	3-33
R645-301-358.	PROTECTION OF FISH, WILDLIFE AND RELATED ENVIRONMENTAL VALUES	3-36
	NRCS LETTER ON PRODUCTIVITY	3-38

CHAPTER 3, BIOLOGY

NOTE TO REVIEWERS: The Wildcat MRP was recently re-formatted to the newer R645 regulations. This reformatted MRP was recently approved and incorporated on May 17, 2006. The current amendment is referred to as the 2008 Modification Plan and consists of three components, namely; 1) addressing Division Order DO-04 regarding wind-blown fines, 2) expanding the primary coal storage pad by about 3.5 acres, and 3) provide for a new material storage area of about 6 acres located on the west side of the facility.

Because the Wildcat MRP was recently reformatted and approved, every effort has been made in this amendment to minimize text changes, as pertains to responses to specific regulations, except where necessary to avoid inconsistencies and contradictions, and to make the response germane to the inclusion of the 2008 Modification Plan. Where appropriate, response to individual regulations regarding the proposed 2008 Modification Plan amendment includes reference to Appendix S. This appendix contains a detailed description of the amendment and is presented in a narrative that integrates the various components which are normally addressed in the separate chapters. Within the chapters themselves, all new discussion relevant to the 2008 Modification Plan amendment is presented in italics to easily differentiate it from the previously approved and reformatted text. The submittal also utilizes the standard "redline/strike-out" to aid in the review.

R645-301-300. BIOLOGY

R645-301-310. INTRODUCTION

Vegetation Information

Introduction

An intensive detailed vegetation survey was not required or performed for the BLM Right-of-Way prior to the construction of this facility. It was a sagebrush/grass lowland with a Pinyon-Juniper community to the west. The following letter, shows the two reference areas identified by the SCS which show the general vegetative types in the area. Although the SCS identified these two

areas, a third area was chosen by the Division of Oil, Gas, and Mining and Andalex Resources and is shown on Plate 1. A detailed vegetation inventory has been performed for Andalex by a qualified range scientist on this third reference area and is included in this document as Appendix I. This inventory will be the basis for a seed mixture to be used during reclamation. Please note that although the SCS identified two reference areas, the reference area being used for this MRP was designated by DOGM and Andalex for use during reclamation.

As part of the 2008 Modification Plan, Phase 2, a new reference area has been identified (see Plate 1A, and also Plate 29

"The existing vegetation reference area is located in the southeastern corner of the property. During Phase 2 construction, this area will be partially covered by the drop zone and will have to be relocated. Patrick Collins (Mt. Nebo Scientific) first studied the area surrounding the loadout and has determined a suitable site for a new vegetation reference area. The new reference area site is located south of the train loadout structure, bounded on either side by the railroad tracks and the Trestle Road (see Vegetation Map of the Wildcat Loadout). Because this site was been determined to be representative at that time, sampling to provide quantitative data was accomplished in July 2007. A final report for the results of this sampling has been provided in the MRP [see Vegetation Sampling Results: Sagebrush/Grass Reference Area at the Wildcat Loadout (2007), found in Appendix I, Supplement].

A more contextual description of the 2008 Modification Plan can be found in Appendix S.

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

Vegetative Types

The vegetative types include Pinyon-Juniper and Sagebrush-Grass. The Loadout Facility was constructed entirely within the Sagebrush-Grass Community. Please see Table III-7. Also refer to Appendix I.

The proposed project area supports plant communities common to the region of Utah. The plant community that is proposed for disturbance by the Wildcat Loadout expansion is primarily a sagebrush/grass community. This community is dominated by Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*), followed by blue grama (*Bouteloua gracilis*), broom snakeweed (*Gutierrezia sarothrae*), foxtail barley (*Hordeum jubatum*) and Indian ricegrass (*Stipa hymenoides*).

Another plant community within the proposed and approved permit area includes pinyon-juniper. This community is dominated by pinyon pine (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*) and many of the same species that are listed above in the sagebrush/grass community (*see Plate 29, Vegetation Map of the Wildcat Loadout*). A sagebrush/grass (with scattered pinyon and juniper trees) community has also been delineated on the vegetation map. This transitional plant community supports the same plant species as communities mentioned above.

Finally, disturbed lands have been shown on the vegetation map of the project area. These areas have been disturbed by the loadout structures, coal piles, roads and supporting operational activities of the facilities. Plants supported in these areas include some of the native plants mentioned above, plus other "weedy" exotics e.g. Russian thistle (*Salsola tragus*), halogeton (*Halogeton glomeratus*) and summer-cypress (*Bassia scoparia*).

Threatened or Endangered Species

There are no known threatened or endangered species within the permit area and the detailed inventory of the reference area has confirmed this.

Plant Communities **(Also R645-301-323.400)**

The Sagebrush-Grass group is present from 6,200 to 9,000 feet on and in the low benches below the cliffs. Sage and rabbit brush appear associated with the common grasses occurring in other communities such as curly grass, indian rice grass, and bull grass. Fourwing and saltbrush is found on better drained soils. Shad scale and curly grass associations are found on the heavier clay soils.

The Pinyon-Juniper Woodland community occurs in the area from an elevation of 5,600 to 8,000 feet and dominates the area below the escarpment of the Wasatch Plateau. Pinyon pine and Utah juniper are the dominant species with bull grass, Indian rice grass, and birch leaf mahogany as associated species.

Identified species of noxious or poisonous weeds in the area are halogeton, cockleburr, loco, and copperweed. There are no concentrated areas or serious problems from these poisonous plants.

Some of the most important vegetation species are listed in Table III-7. Please see Appendix I for the site specific vegetation inventory.

TABLE III-7

Vegetation Possibly Occurring in Area

Common Name	Scientific Name
Grasses:	
curly grass	Hilaria jamesii
indian rice grass	Oryzopsis hymenoides
squirreltail	Sitanian hystix
needle and thread grass	Stipa commata
no eatum grass	Aristida fendleriana
western wheat grass	Agropyron smithii
bull grass	Elymus salinus
Shrubs:	
nuttal saltbush	Atriplex nuttallii
mat saltbush	Atriplex corrugata
shadscale	Atriplex confertifoldia
fourwing saltbush	Atriplex canecens
big sagebrush	Artemisia tridentate
black sagebrush	Artemisia arbuscula nova
greasewood	Sarobatus vermiculatus
small rabbitbrush	Chrysothamnus viscidiflorus
big rabbitbrush	Chrysothamnus nauseosus
mountain-mahogany	Cercocarpus montanus
serviceberry	Amelanchief alnifolia
curlleaf mahogany	Cercocarpus ledifolius
squaw apple	Peraphyllum ramosissimum
snowberry	Symphoricarpos oreophilus
Trees:	
juniper	Juniperus osteosperma
pinion	Pinus edulis
ponderosa pine	Pinus ponderosa
aspen	Populus temuloides
limber pine	Pinus flexilis
douglas fir	Pseudotsuga menziesii
gambel oak	Quercus gambelii

Area to be Disturbed

The surface area disturbed is ~~60.94~~ *81.78* acres as shown on Plate 1, 2 and 16. ~~of which approximately 20 acres were disturbed by Andalex.~~ The disturbed area does not include the ASCA's or the Utah Railway tracks. The present surface facilities are located in an area that has been previously impacted by loading activities. Actual plant communities which have been disturbed is the Sage-Grass. Extreme care has been taken to disturb as little vegetation as possible and revegetation has been immediately carried out on all disturbed areas no longer needed for the mining operation.

Fish and Wildlife Resources and Plan **(Also R645-301-342)**

Introduction

The loadout area is located east of the Wasatch Plateau, a region which supports about 360 vertebrate wildlife species. The abundance and distribution of wildlife in the lease area is directly related to present land use activities and capabilities. Use of this area by certain species is limited to lack of perennial water. Wildlife species possibly occurring in the lease area are listed in Table III-8. Please see Appendix F re Wildlife Resources Information.

Source of Data

Department of the Interior, 1979. Final Environmental Statement - Development of Coal Resources in Central Utah, Parts 1 and 2. (Sections 3, 4.0, 4.1, 4.2, 4.3, 4.4, and 4.5)

Andalex Resources (Chapter 3)

Utah Department of Natural Resources, Division of Fish and Wildlife. (Appendix F)

U.S. Department of Interior, Bureau of Land Management (Appendix E)

Habitats

Previously described vegetation provides fair to excellent habitat for a variety of wildlife species. It also provides critically important winter range for deer.
Species (Please see Table III-8)

Mammals

Mammals occurring in the area can be divided into two groups, game species and non-game species.

The main game species include mule deer, mountain lion, black bear, elk, and cottontail rabbits. Mule deer, however, are the most important wildlife resource in the area. Mountain lion are present but little information is available due to their ranging habits. Generally, their movement coincides with the migration of deer. Black bear may occasionally be found in the vegetated canyons, usually along the cliff face. They normally inhabit the Wasatch Plateau to the west but little data is available on their populations. The permit area is not within the limits of the elk range. Cottontail rabbits are distributed throughout the area.

Non-game mammals include several species of small animals inhabiting the area. Predator species such as coyote and bobcat occasionally are found in the area and depend on small rodents and rabbits for their source of food. Information on non-game species is generally unavailable.

TABLE III-8

List of Animals Possibly Occurring in Region

Common Name	Scientific Name
Mammals:	
Badger	Taxidea taxus
Black Bear	Ursus americanus
Bobcat	Lynx rufus
Coyote	Canis latrans
Deer mouse	Peromyscus maniculatus
Desert Cottontail	Sylvilagus audubonni
Elk	Cervus elaphus
Ground Squirrel	Spermophillus tridecelineatus
Least Chipmunk	Eutomias minimus
Mountain Lion	Felis concolor
Mule Deer	Odocoileus hemionus
Porcupine	Evethizon dorsatum
Striped Skunk	Mephitus mephitus
White-tailed Jackrabbit	Lepus townsendii
White-tailed Prairie Dog	Cynomys leucurus
Birds:	
Brewers Sparrow	Spizella breweri
Blue Grouse	Dendragapus obscurus
Common Nighhawk	Chordeiles minor
House Sparrow	Passer Domesticus
Lark Sparrow	Chondestes grammacus
Magpie	Pica pica
Mourning Dove	Zenaidura macroura
Pinyon Jay	Gymnorhinus cyanocephala
Red-tailed Hawk	Buteo jamaicenis
Robin	Turdus migratorius
Ruffed Grouse	Bonasa umbellus
Sage Grouse	Centrocercus urophasianus
Sparrow Hawk	Falco sparverius
Turkey Vulture	Cathartes aura
Vesper Sparrow	Pooecetes gromineus
Great Horned Owl	Bubo Virginianus

Birds

Raptors

The turkey vulture and red-tailed hawk frequent the area. A variety of other raptors breed in the Price area; however, there is a poor density of raptors throughout the plan area. Bald eagles migrate through this area in the winter and a variety of owl species are occasionally observed year round.

Most interestingly, a family of Great Horned Owls successfully nested on top of the loadout structure. A Great Horned Owl had been observed during the winter months flying and roosting near by. Owl eggs were first observed on top of the loadout beneath the conveyor belt in early March. The DWR was contacted immediately and we were instructed to do nothing and continue operations normally. The DWR advised us that once the chicks hatched, they would move them to a nest box which Andalex built and mounted nearby but out of the way. The chicks hatched in mid April and were moved the same day. When the chicks (two) were approximately one month old, they were banded by officers of the DWR. The chicks matured and left the nest in June. The DWR feels that there is a strong possibility that the owls may return in 1989.

Other

Sage grouse inhabit the sagebrush flats at the foot of the cliffs. Blue and ruffed grouse may occasionally be found in the vegetated canyons of the area. Chukars can be found around the cliffs. Mourning doves are generally distributed throughout the area; however, the lack of perennial water limits dove nesting habitat in the area. Other representative birds include the magpie, bluebird, robin, and several species of sparrow.

Reptiles and Amphibians

The most prominent species of reptiles include the rattlesnake and sagebrush lizard. No aquatic fauna are present in the area.

Fish

There are no active fisheries as there are no permanent bodies of water or perennial streams in the area. No

aquatic fauna are found.

For the 2008 Modification Plan project Area the BLM Environmental Analysis (see Appendix T) states:

"Wildlife.
Wildlife indigenous to the general area of the project includes amphibians, reptiles, birds and mammals. The area is located east of the Wasatch Plateau, a region that supports approximately 360 vertebrate wildlife species. The abundance and distribution of wildlife in the proposed project area is directly related to the present land use and capabilities. The vegetation in this area provides crucial winter range for mule deer and greater sage grouse.

Reptiles & Amphibians *The most prominent species of reptiles include the rattlesnake and various lizard species. The pinyon/juniper and sagebrush/grass areas that make up most of the affected habitat are not considered important or limiting to their survival. No aquatic fauna are present within the area; therefore, reptiles and amphibians will not be discussed further.*

Fish. *There are no permanent bodies of water or perennial streams within the area, therefore no fish species would be affected.*

Raptors. *A variety of raptors occupy the surrounding area, however all of the located nest sites are more than 0.5 mile from the proposed project area. The May 2006 raptor survey conducted by UDWR did not reveal any active or tended nest sites within a 1-mile buffer of the proposed project site (Plate 3).*

The proposed project is located within crucial winter and brooding range for greater sage grouse. This species is usually inhibits the sagebrush flats at the foot of the cliffs.

Mammals. *The main game species include mule deer, mountain lion, blackbear and elk.*

Mule Deer. *Mule deer habitats within the affected area is considered crucial winter range. Mule deer population densities within this herd unit are well below management objectives.*

Mountain Lion. *Mountain lion area present but their movement generally coincides with the migration of deer. This species will not be discussed further.*

Black Bear. *Black bear may occasionally be found in the vegetated canyons, usually along the cliff faces. This species will not be discussed further.*

Elk. *The project area is not within the limits of elk range. Therefore, this species will not be discussed further."*

A more contextual description of the 2008 Modification Plan can be found in Appendix S.

Threatened or Endangered Species
There have been no known threatened or endangered species on or near the lease area according to a survey conducted by the Utah Division of Wildlife Resources.

For the 2008 Modification Plan project area the BLM Environmental Analysis (see Appendix T) states:

"Threatened, Endangered and Sensitive Species.
The area has potential habitat and suitability criteria for two flora species- Creutzfeldt cryptantha (Cryptantha creutzfeldtii) and Uinta Basin hookless cactus (Sclerocactus glaucus); three avian species- Northern Goshawk (Accipiter gentiles), greater sage-grouse (Centrocercus urophasianus) and burrowing owl (Athene cunicularia); three mammal species- kit fox (Vulpes Macrotis), White-tailed prairie-dog (Cynomys leucurus), and black-footed ferret (Mustela nigripes); no reptiles, fish and/or amphibians of special interest would occur within the project area. There is suitable habitat for both neo-tropical and migratory birds.

In accordance with the United States Fish and Wildlife Service's (USFWS) protocols an inventory for the habitat suitability presence of threatened, endangered and candidate fauna and floral species was conducted on September 27, 2006."

A more contextual description of the 2008 Modification Plan can be found in Appendix S.

Impacts of Operations **(Also R645-301-333)**

Construction of all roads, powerlines, and surface facilities has been completed *(except for the proposed 2008 Modification Plan expansion)* and loading operations have commenced. Therefore, no additional impact of operations on wildlife is anticipated. Powerlines were constructed according to DWR and USF&W guidelines. It should be noted that this facility has had a good history of co-existing with wildlife in this area. This is constantly observed.

Fish and Wildlife Plan **(Also R645-301-322.210, 333.200 and 358)**

The Fish and Wildlife Plan was prepared by the Utah DWR under the direction of Mr. Larry Dalton in 1987 (please

see Appendix F). The purpose for this study was to estimate the types and densities of wildlife expected to be found in the area. It was also done to determine whether or not threatened or endangered species existed and whether or not the impacts to wildlife could be mitigated. The environmental assessment performed by the B.L.M. (Appendix E) was performed to estimate the best methods which could be used for the Wildlife Enhancement Project. Part of any grant issued by the B.L.M. includes an environmental assessment. This assessment was put together by the B.L.M. in the summer of 1984.

Please refer to Appendix F re Fish and Wildlife Resources and Plan. It should be noted that there is no aquatic life in the permit area as this area is dry except as a result of direct precipitation (ephemeral streams). Andalex has performed numerous mitigative measures including extensive revegetation in the area directly mitigating our disturbance. Andalex has performed all mitigative measures outlined in the Fish and Wildlife Plan (Appendix F) with the exception of the use of swareflex reflectors.

Andalex has advised and encouraged employees to avoid unnecessary disturbances to all wildlife regardless of the season, but especially the depleted winter season or the breeding season. Hunting and all wildlife regulations are adhered to. In corporation with the Division of Wildlife Resources and the College of Eastern Utah, Andalex has incorporated a visual training guide for its employees to be used annually during mine retraining.

To date, Andalex has had no use for poisons for rodent control or any other persistent pesticide.

Snake dens will be reported to the DWR.

Andalex will report the sitings of any known threatened or endangered species within or in the vicinity of the permit area.

Andalex will commit to reporting any unapproved range or forest fires. Spontaneous combustion in the coal piles occurs from time to time particularly in the winter months. These small smoldering areas in the coal piles

are extinguished easily and immediately using a frontend loader. All coal piles are subject to this phenomenon and Andalex is sure that the division would not want each small coal fire reported.

No avifauna will be disturbed within Andalex's minesite and in particular, raptors and their nests. Andalex's powerline was constructed under the guidance of the Utah DWR and USF&W.

Lodges, nests, and dens for all mammals will be protected from disturbance. Andalex has reduced speed limits posted within the permit area to 15 mph. The haulroad year-round is posted at 40 mph. Swareflex reflectors will not be implemented.

There are no unpaved sections of the haul road and swareflex reflectors are not being used. Andalex has demonstrated mitigation of impacted habitat through revegetation efforts on areas in and outside the permit area. We have had employee wildlife education sessions in the past and may perhaps in the future. The powerline was constructed under strict guidelines and has been thoroughly checked by both the Utah DWR and the U.S. Fish and Wildlife Service. Prior to November 30, 1988, Andalex will provide the 4" gap in the ground wire on all cross-arm type structures from the substation to the loadout.

Please note that as an indication that this facility is not disruptive to wildlife, deer herds are constantly observed moving through the area, drinking from our ponds, and feeding on revegetated areas. Also, small mammals such as prairie dogs have formed towns within the permit area.

Most interestingly, a family of Great Horned Owls have successfully nested on top of the loadout structure.

Should Andalex observe <u>reoccurring</u> problems with respect to wildlife fatalities which potentially could be corrected, Andalex will make every effort to correct these problems.

Please note that a large area of revegetation was undertaken by Andalex to enhance wildlife range thereby mitigating the loss of range through the construction of this facility. The acreage enhanced by Andalex Resources

is roughly the same as that acreage disturbed by Andalex for the Wildcat Loadout Facility. Please bear in mind that the majority of the Wildcat Facility had been previously impacted by coal loading operations and railroad operations. Appendix E is a description of the mitigation work performed by Andalex under the direction of the B.L.M. and the Utah D.W.R. Andalex is following all guidelines set forth in the Fish and Wildlife Plan except the use of swareflex reflectors.

Andalex Resources was issued a right-of-way and a temporary land use permit associated with its' Wildcat Loadout Facility. A stipulation to these grants was that Andalex would perform a wildlife enhancement project tomitigate the loss of critical deer winter range as a result of the construction of the loadout facility. This work was performed under the direction of the Bureau of Land Management and the Division of Wildlife Resources in the fall of 1984. The work consisted of the elimination of undesirable vegetation and replacing it with preferred deer range species. Vegetation was removed with a plow and the seed mixture developed by the Utah DWR was planted using a rangeland drill. Andalex Resources performed this work on an area of approximately 21 acres (Plate 18 outlines the area impacted by Andalex for the Wildcat Loadout. The remaining acreage consumed by the Wildcat Loadout Facility was previously disturbed). Andalex has fulfilled its' obligations under these grants. It should be noted that contemporaneous reclamation as well as sediment pond construction has in itself mitigated impact to deer winter range within the permit area. It should also be noted that the mineral sale borrow area was never used. Please see Appendix E.

During the spring of 1988, Andalex Resources' personnel traveled to the site where wildlife enhancement took place. Areas which were plowed and seed drilled were stepped off and measured in the field and a total of 21 acres was estimated with reasonable accuracy. A direction and chain method was utilized to measure the areas. Plate 18 depicts the areas disturbed by Andalex versus previously disturbed areas. These two areas can be distinguished easily on the aerial photo. Please note that the temporary land use area was one of the previously disturbed areas and as such, Andalex did not destroy any valuable deer winter range. The actual acreage disturbed by Andalex totals ~~24.5~~ *81.79* acres. Andalex would also like to point out that large portions

of the disturbed area have been enhanced subsequent to the construction of the facility to create reasonably good wildlife habitat, specifically, deer. This has been accomplished with contemporaneous reclamation of all areas not being utilized within the disturbed area (pond embankments, other slopes, and topsoil storage piles have all been revegetated). Also, it has been observed that the sedimentation ponds create drinking reservoirs for deer. During winter months at the Wildcat facility, deer herds of up to 50 animals have been observed on a frequent basis, grazing and drinking within Andalex's disturbed area. The deer actually congregate within Andalex's disturbed area. None of Andalex's activities affect the deer herd as far as migration or movement. Deer have been observed even walking beneath unit trains. Therefore, Andalex's facility offers no obstructions to deer movement. Taking all this into consideration, and as a result of an agreement between Andalex and the Utah Division of Wildlife Resources, Andalex has agreed to enhance an additional approximately 15 acres in the near future. Andalex will perform this work in the fall of 1989 in accordance with the UDWR alternative 1.

Water consumption at this site averages approximately 2.48 acre feet per year. Of this amount, approximately 2.16 acre feet is used for dust control and 0.32 acre feet is used for culinary purposes. *This water is hauled in to the site by truck by a private commercial contractor from the local public water supply (PRWID). Implementation of the 2008 Modification Plan will not affect the amount of water consumption at the site.*

R645-301-311. VEGETATIVE, FISH AND WILDLIFE RESOURCES

See R645-301-310.

R645-301-312. POTENTIAL IMPACTS

See R645-301-310 "Area to be Disturbed".

R645-301-313. RESTORATION OR ENHANCEMENT

See Appendix E.

R645-301-320. ENVIRONMENTAL DESCRIPTION

See R645-301-310.

R645-301-321. VEGETATION INFORMATION

See R645-301-310.

R645-301-321.100. POTENTIAL FOR REESTABLISHING VEGETATION

Appendix N

R645-301-321.200. PREMINING PRODUCTIVITY

Not available - Site was disturbed pre-law by another operation.

R645-301-322. FISH AND WILDLIFE INFORMATION

Appendix F; R645-301-310.

R645-301-322.100. PROTECTION AND ENHANCEMENT PLAN

Appendix E & F

R645-301-322.200. SITE-SPECIFIC RESOURCE INFORMATION

Appendix F

R645-301-322.210. THREATENED OR ENDANGERED SPECIES

Listed below on Table 1 are plant and animal species that have been federally listed as endangered, threatened and candidates for such listings in Carbon County, Utah. Also included in the table are notes and comments about the species, the habitat in which they occur and the potential of their existence in the Wildcat Loadout permit area.

Table 1: Wildcat Loadout. Federally Listed Threatened, Endangered and Candidate Species for Carbon County, Utah

Scientific Name	Common Name	Status*	Site-Specific Notes
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	C	Habitat requirements of the yellow-billed cuckoos are in riparian zones, usually in large tracts of cottonwood/willow habitats with dense sub-canopies. These habitats do not occur in the Wildcat Loadout study area.
Gila cypha	Humpback chub	E	Humpback chub in Utah are now confined to a few white-water areas in the Colorado, Green, and White Rivers. These rivers do not occur in the Wildcat Loadout study area and the drainage control measures of the site limit impacts to the downstream drainages of the Colorado River system.
Gila elegans	Bonytail	E	The bonytail is a very rare minnow originally native to the Colorado River system. These rivers do not occur in the Wildcat Loadout study area and the drainage control measures of the site limit impacts to the downstream drainages of the Colorado River system.
Mustela nigripes	Black-footed ferret	E (Extirpated)	Although potential habitat exists in the area, this species is considered to be "extirpated" and thought to no longer occur in Utah by the U.S. Fish & Wildlife Service.

Penstemon grahamii	Graham beardtongue	T (Proposed)	The Wildcat Loadout area is out of the known distribution of this species. This species is known to occur on talus slopes in the Green River geologic formation, which does not occur in the Wildcat study area.
Ptychocheilus lucius	Colorado pikeminnow	E	The Colorado pikeminnow is a fish that prefers medium to large rivers. With the loss of habitat they are now restricted to the upper Colorado River system. These rivers do not occur in the Wildcat Loadout study area and the drainage control measures of the site limit impacts to the downstream drainages of the Colorado River system.
Sclerocactus glaucus	Uinta Basin hookless cactus	T	The Wildcat Loadout area is out of the known distribution of this species. *Sclerocactus glaucus* generally occurs on cobblely, gravelly, or rocky surfaces on river terrace deposits . *S. glaucus* occurs on varying exposures, but is more abundant on south facing exposures, and on slopes to about 30 percent grade; it is most abundant at the point where terrace deposits break from level tops to steeper side slopes.

Strix occidentalis lucida	Mexican spotted owl	T	The spotted owl occupies a variety of habitats in different parts of its range, including various forest types and steep rocky canyons; the last habitat being the primary habitat used in Utah. UDWR distribution maps of this species in Carbon County shows the owl to be located only near the Green River in northeastern portion of th county. Nesting habitat for this species (larger trees with trunk cavities or cliffs) are not located in the Wildcat Loadout study area.
Xyrauchen texanus	Razorback sucker	E	This species prefers slow backwater habitats and impoundments in the Colorado River system. UDWR distribution maps of this species for Carbon County shows the sucker to occur near the Green River in extreme eastern portion of th county.

* Status
C = Candidate
E = Endangered
T = Threatened

Additionally, the GIS database of the Utah Natural Heritage Program (UNHP) and the State of Utah Division of Wildlife Resources includes a few more sensitive species with the potential of occurring in the general area (Table 2).

Table 2: Wildcat Loadout. Sensitive Species in the General Wildcat Loadout Study Area

Scientific Name	Common Name	G-Rank*	Site-Specific Notes

Table 2: Wildcat Loadout. Sensitive Species in the General Wildcat Loadout Study Area			
Haliaeetus leucocephalus	Bald eagle	G 5	Recent raptor surveys conducted by DWR showed all raptor nests located in the area to be more than 0.5 mile from the Wildcat Loadout site. The survey also found no acitve or tended nest sites iwthin a 1-mile buffer of the site (see EA Appendix T).
Catostomus discobolus	Bluehead sucker	G 4	This species occurs in the upper Colorado River system, the Snake River system, and the Lake Bonneville basin. These rivers do not occur in the Wildcat Loadout study area and the drainage control measures of the site limit impacts to the downstream drainages of the Colorado River system.
Accipiter gentilis	Northern goshawk	G 5	Recent raptor surveys conducted by DWR showed all raptor nests located in the area to be more than 0.5 mile from the Wildcat Loadout site. The survey also found no acitve or tended nest sites iwthin a 1-mile buffer of the site (see EA Appendix T).
Centrocercus urophasianus	Greater sage-grouse	G 4	See "High-Value Habitats" below.

Table 2: Wildcat Loadout. Sensitive Species in the General Wildcat Loadout Study Area

* **G-Rank Legend**

G1= *Species is critically imperiled across it enter range ("global")*

G2= *Globally imperiled*

G3= *Globally vulnerable to extirpation or extinction*

G4= *Apparently secure*

Finally, an Environmental Assessment (EA) of the project area was finalized January 18, 2007 (Appendix T). The EA stated that an inventory for the habitat suitability for the presence of threatened, endangered and candidate plant and animal species using United States Fish & Wildlife Service (USFWS) protocol was conducted September 27, 2006. The survey suggested that there was potential habitat for two sensitive plants in the area including Creutzfelt cryptantha (*Cryptantha creutzfeldtii*) and Uinta Basin hookless cactus (*Sclerocactus glaucus*). The EA also suggested that there was potential habitat for three avian species including northern goshawk (*Accipiter gentilis*), greater sage-grouse (*Centrocercus urophasianus*) and burrowing owl (*Athene cunicularia*). Moreover, the EA suggested the potential habitat for three mammal species including kit fox (*Vulpes macrotis*), white-tail prairie-dog (*Cynomys leucurus*) and black-footed ferret (*Mustela nigripes*) in the area. In conclusion, the EA states that "*the same habitat is abundant throughout the region and is not a limiting factor to the spread or propagation of these species*".

High-Value Wildlife Habitats

While some wildlife information has been provided in the

WILDLIFE RESOURCES INFORMATION (Appendix F) and the ENVIRONMENTAL ASSESSMENT (Appendix T) in the Mining & Reclamation Plan (MRP) for the Wildcat Loadout, high-value habitat of the area has also been assessed and is briefly described below. To update any previous information about the site, the State of Utah, Division of Wildlife Resources (DWR) geographic information system (GIS) database was consulted in January 2008 regarding the existence of high-value habitats in the area. Of the species maintained on the database, important habitats for three species have been identified within the boundaries of the Wildcat Loadout approved and proposed permit area. These habitats are described below.

Rocky Mountain elk (*Cervus canadensis*) habitat was located in the area. "Crucial winter" habitat has been identified by DWR on the west side of the railroad tracks.

Mule deer (*Odocoileus hemionus*) habitat has also been mapped in the area by DWR. The habitat has been classified as "crucial winter habitat" for deer.

Finally, **sage-grouse** (*Centrocercus urophasianus*) habitat has been documented in the project area. DWR has mapped much of the area to be "crucial winter" and also "crucial brooding" habitat for these birds.

Plant Community Information

Because the Wildcat Loadout was constructed before the regulations required coal loadouts to fall under the authority mandated by the Surface Mining Control and Reclamation Act of 1977 (SMCRA), no quantitative data were recorded prior to disturbance of the existing plant communities. However, by visiting the site and reviewing aerial photographs, it was relatively easy to predict the plant communities that existed prior to development of the Wildcat Loadout. However, quantitative data were recorded in the growing season of 2007 in the major plant community that most-likely existed prior to construction of the Wildcat Loadout. These datasets were collected to provide information and justification for a new reference area that will be used for revegetation success standards at the time of final reclamation of the site. For sample results of the reference area, refer to the final report called: *Vegetation Sampling Results: Sagebrush/Grass*

Reference Area at the Wildcat Loadout 2007 (see Appendix I, Supplement).

R645-301-322.220. HABITATS OF UNUSUALLY HIGH VALUE FOR FISH AND WILDLIFE

See R645-301-310.

R645-301-322.230. OTHER SPECIES OR HABITATS REQUIRING SPECIAL PROTECTION

N/A

R645-301-322.300. FISH AND WILDLIFE SERVICE REVIEW

Appendix B - Item 22 (Powerline Approval)

R645-301-323. MAPS AND AERIAL PHOTOGRAPHS

A vegetation map has been prepared for the Wildcat Loadout site. The aerial photograph map shows the existing (approved) permit area as well and the new (proposed) permit boundary lines. Also included on the map are the plant communities that are supported within and adjacent to the permit boundaries (see Plate 29, *Vegetation Map of the Wildcat Loadout*).

R645-301-323.100. REFERENCE AREAS

See Plate 1.

R645-301-323.200. MONITORING STATIONS

N/A

R645-301-323.300. ENHANCEMENT FACILITIES

N/A

R645-301-323.400. PLANT COMMUNITIES

See R645-301-310.

R645-301-330. OPERATION PLAN

Vegetation, Fish & Wildlife Protection

No threatened, endangered, candidate or otherwise sensitive species have been located in the Wildcat Loadout study area [see *Fish & Wildlife Information* (R645-301-322) above]. However, high-value habitats of three wildlife species have been described above [see also *High-Value Wildlife Habitats* (R645-301-322)].

"Crucial winter" habitat has been identified on the west side of the railroad tracks for **Rocky Mountain elk**. The State of Utah, Division of Wildlife Resources (DWR) notes that "crucial value" designation of a given habitat is where a specific wildlife species depends on it for survival because there are no alternative ranges or habitats available. *"Crucial value habitat is essential to the life history requirements of a wildlife species. Degradation or unavailability of crucial habitat will lead to significant declines in carrying capacity and/or numbers of wildlife species in question".*

WILDLIFE RESOURCES INFORMATION (Appendix F) in the Mining & Reclamation Plan (MRP) for the Wildcat Loadout states that elk do not show as strong altitudinal migration as mule deer in response to winter conditions, but they do migrate to

wintering areas. Migration to the winter range begins during late-October. The hunting season along with the changing weather conditions probably initiates migration to these areas. The onset of adverse weather conditions probably keeps the elk on their winter range. Elk likely occupy their winter habitat near the Wildcat Loadout from December through April each year. Severe winter conditions restrict the elk to concentrated areas rendering the areas as "crucial" habitat. These crucial habitats should be avoided from construction disturbance when elk are physically present on the range. Elk begin their migration back to their summer ranges by the month of May and remain there throughout the summer and fall months of each year.

Mule deer habitat has also been identified in the area by DWR. The habitat has been classified as "crucial winter habitat" for deer. Like the definition for "crucial" above, the *habitat is essential to the life history requirements of a wildlife species. Degradation or unavailability of crucial habitat will lead to significant declines in carrying capacity and/or numbers of wildlife species in question*". Since the Wildcat Loadout area is crucial winter habitat, construction activities during specific times should be avoided. The MRP's WILDLIFE RESOURCES INFORMATION (Appendix F) states the most critical time period for fawning in this area is from June 15 through July 5 each year.

As mentioned in the *High-Value Wildlife Habitat* section above, the Wildcat Loadout area also supports crucial winter and brooding habitat for **sage-grouse**. No known leks have been identified in the immediate or adjacent areas of the Wildcat Loadout, so expansion of the loadout should not impact local breeding activities of this species. If leks are discovered in the immediate area, construction should be planned around the courtship and mating activities which usually begins in early March. Use of leks may continue as late as June each year.

Maps and Plans

The lands affected by this operation (surface only) are clearly shown on Plate 1. Plate 1 depicts all buildings, utilities, and facilities. All of the land within this

permit area which is to be affected already has been. This is a surface facility only and involves no underground workings. The bond required by the Division is for the entire affected area including all the surface facilities.

Coal storage, topsoil storage, loading areas, coal preparation waste areas are all depicted on the surface facilities map. Additional detail on topsoil, diversions, and ponds can be found in Volume II on Plates *1, 1A, and 13A-C*.

There is no storage of explosives at the Wildcat Loadout.

The final surface configurations will be similar to the surface prior to Andalex's involvement at Wildcat, *as shown on Plate 8.* ~~Cross sections and a surface configuration plate are included in Volume II as 10 and 9 respectively.~~

Surface water monitoring locations are shown on Plate *2*.

After the completion of activities at this facility, no structures will remain with the exception of the railroad grade, the tracks, and it's associated drainage structures.

All maps requiring certifications by a registered person have been done so. Included are stamps from experts in related fields such as surveying.

R645-301-331. MINIMIZING IMPACT AND SURFACE EROSION

Protection measures are described in Appendix F. Revegetation and erosion control are described in Section R645-301-340 and R645-301-512.240, respectively

R645-301-332. IMPACTS OF SUBSIDENCE ON RENEWABLE RESOURCE LANDS

N/A

R645-301-333. USING THE BEST TECHNOLOGY CURRENTLY AVAILABLE TO MINIMIZE DISTURBANCE AND IMPACT

See R645-301-310.

R645-301-333.100. PROTECTION OF THREATENED AND ENDANGERED SPECIES

There have been no known threatened or endangered species within the permit area. See R645-301-310.

With regard to the Colorado River Endangered Fish Recovery Program, surface consumption is limited to water sprayed on the haul roads for dust suppression, and water used for showers and toilets. This water is all hauled in under contract with D&D Trucking, who purchase the water from the Price River Water Improvement District. Daily records kept at the loadout show that for the year 2007 D&D delivered 677 loads, each with 4000 gallons for a total of 2,708,000 gallons. The other potential source of consumption is evaporation from the sediment ponds. Unlike slurry ponds or treatment ponds, the sediment ponds are normally dry and the evaporation amount is minimal.

R645-301-333.200. SITE-SPECIFIC PROTECTION OF THREATENED AND ENDANGERED SPECIES

See R645-301-310.

R645-301-333.300. PROTECTIVE MEASURES DURING ACTIVE PHASES OF MINING OPERATIONS

Appendix F

R645-301-340. RECLAMATION PLAN

The complete reclamation plan is described under R645-301-240.

R645-301-341. REVEGETATION

Revegetation

Revegetation will be accomplished by Andalex or under Andalex's direct supervision and under the recommendations of the regulatory authority. A seed mixture has been developed and can be found in this chapter. This mixture was developed by estimating vegetative types in the sagebrush/grass reference area established by DOGM and Andalex. Please refer to Appendix I and Plate 1.

R645-301-341.100 SCHEDULE AND TIMETABLE

Schedule of Revegetation

The seeding of native flora (consisting where possible of deer browse species), will commence as soon as is practical following regrading and topsoil replacement. This revegetation will help stabilize the soil and the fill quickly. Revegetation will be accomplished by Andalex or under Andalex's direct supervision and under the recommendations of the regulatory authorities. Revegetation will occur during the first fall planting season following the regrading and topsoil redistribution. Please refer to Revegetation Schedule.

Andalex Resources' Revegetation Schedule

TASK MONTH:

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Review reveg. plan	XX	X								
Order seed		X								
Regrading				XXXX	XXXX	XXXX				
Spread topsoil							XXX			
Seedbed Prep.							XX	X		
Apply fertilizer		XX*						XX		
Seeding								XX	X	
Mulching								XX	X	

Tasks to be done in subsequent years: (years 2, 3, and 5, 9, and 10, following planting, minimum)**

* May need application of N the spring following seeding.

** Productivity will be sampled only during years 9 and 10. Also, the reference area will be sampled during the years 9 and 10.

Andalex Resources' Revegetation Monitoring Schedule

QUALITATIVE OBSERVATIONS:

Reclamation type	YEAR 1	2	3	4	5	6	7	8	9	10
Permanent Reclamation	X	X	X	X	X	X	X	X	X	X
Trial Plantings	X	X	X	X	X	X	X	X	X	X
Test Plots	X	X	X	X	X	X	X	X	X	X
Interim Stabilization	X	X	X	X	X	X	X	X	X	X

QUANTITATIVE OBSERVATIONS:

Parameter	YEAR 1	2	3	4	5	6	7	8	9	10
Cover		X	X		X				X	X
Frequency		X	X		X				X	X
Woody Plant Density		X	X		X				X	X
Transplant Survival	X*	X	X							
Productivity:										
Test plots			X		X				X	X
All Other Revegetation									X	X

* Sampling will take place in the fall of the year.

R645-301-341.200. DESCRIPTION

Soil Testing Plan and Soil Preparation

Where possible the soil will be distributed along the contour. Soil will be redistributed using dump trucks and graders. The thickness of the re-established soil will be consistent with the pre-mining conditions. As this facility was previously impacted by other loading operations, Andalex was unable to gather topsoil on these areas. This will require the use of topsoil substitute material for final reclamation. Andalex has chosen potential topsoil substitute material and is currently in the process of performing the necessary tests and monitoring to demonstrate that it is suitable (page 51). Twenty samples of potential substitute topsoil material have been sent to the Utah State University Soils Lab. There are four test plot locations, A through D (Plate 1), and samples at each location have been taken from 0-6", 6-12", 1-2', 2-3', & 3-4'. Samples will be taken from the new test area west of the railroad tracks at these same depths. All test plots, including the newest plot will be analyzed for: soil color, texture, pH, organic carbon, saturation percentage, alkalinity, electrical conductivity, calcium carbonate percentage, sodium absorption ratio, soluable potassium, magnesium, calcium, sodium, total nitrogen, available phosphorous, available water capacity, and percent rock fragments. The results can be found in Appendix D. Once any of the areas of substitute material have been determined suitable for reclamation, all or part of these areas will be carefully outlined on Plate 1 and the volumes necessary to make up the current topsoil deficit, will be included in the Topsoil Pile Summary. This will require approximately 29,000 additional cubic yards of material.

Prior to final reclamation, samples will be taken of the stored topsoil to determine any deficiencies which would affect the growth of newly revegetated areas. Any deficiencies will be corrected by adding to the soil chemical fertilizers, organic mulch, or any other substances recommended by the regulatory authority. Preparation techniques such as discing will be incorporated.

Regarding the 2008 Modification Plan, the following narrative is taken from Appendix S:

"Presently there are four topsoil piles existing at Wildcat. However, because Wildcat was not originally

permitted under SMCRA regulations the existing topsoil volume is not sufficient to reclaim the existing disturbed area to a depth of 6" as required under the approved reclamation plan. The 2008 Modification Plan provides an opportunity to rectify this situation. As described above (in Appendix S), two new areas are to be added to the Wildcat operational area; the expanded coal storage pad/drop zone and the material storage area. These areas are suitable areas to salvage additional topsoil. In addition, the new sediment ponds associated with the expanded facilities are also sites for additional topsoil salvage. By stripping excess topsoil from these combined areas during this phase of construction Andalex should be able to secure sufficient topsoil, when combined with the existing topsoil storage, to adequately reclaim the entire disturbed area with 6" as required by the approved plan.

Figures 13A, 13B and 13C show the existing topsoil volumes, the projected volumes of new topsoil piles associated with the 2008 Modification Plan, and the salvage source areas. In summary, the present piles contain about 17,000 yds. The existing topsoil deficit is now about 32,000 yards. By committing to salvage 24" of topsoil material from these new construction areas an additional 50,000 yds should be generated. This would be sufficient to not only reclaim the newly disturbed areas but to reclaim the present disturbed area as well. After the 2008 Modification Plan is constructed, there should no longer be a topsoil deficit.

At this time Andalex proposes to leave the existing substitute topsoil commitment (R645-301-224) in place in the plan. After the 2008 Modification Plan has been constructed the new topsoil piles will be surveyed and mapped, and exact volumes established. Assuming the topsoil deficit has been erased, Andalex will (with concurrence from the Division) eliminate the substitute topsoil section from the MRP at that time."

A more contextual description of the 2008 Modification Plan can be found in Appendix S.

R645-301-341.210. SPECIES AND AMOUNTS PER ACRE OF SEEDS AND/OR SEEDLINGS USED

A reference area has been established by Andalex and DOGM. The sagebrush/grass reference area was used in combination with a vegetation inventory to determine the final seed mixture and amounts of seed to be used for final reclamation.

The following seed mixture, was developed by UDOGM in conjunction with the vegetation inventory.

Wildcat Loadout Final Seed Mixture			
Scientific Name	**Common Name**	**PL**	**Seeds**
Amelanchier utahensis	Utah serviceberry	7.00	4.15
Artemisia tridentata	Big sagebrush	0.06	3.44
Ceratoides lanata	Winterfat	5.00	6.31
Chrysothamnus nauseosus	Rubber rabbitbrush	0.30	2.75
Purshia tridentata	Bitterbrush	12.00	4.13
Archillea millefolium	Yarrow	0.05	3.18
Hedysatum boreale	Northern sweetvetch	8.00	6.17
Linum lewisii	Lewis flax	1.00	6.38
Penstemon palmeri	Palmer penstemon	0.50	7.00
Viguiera multiflora	Showy goldeneye	0.20	4.84
Bouteloua gracilis	Blue grama	0.60	9.79
Elymus spicatus	Bluebunch wheatgrass	2.50	8.03
Elymus trachycaulus	Slender wheatgrass	2.50	9.18
Hilaria jamesii	Galleta	2.50	9.13
Stipa comata	Needle-and-thread grass	3.00	7.92
Stipa hymenoides	Indian ricegrass	2.00	8.63
TOTALS		47.21	101.06

Wildcat Loadout Interim Seed Mixture			
Scientific Name	**Common Name**	**PLS/Ac**	**Seeds Per/ft²**
Archillea millefolium	Yarrow	0.30	19.08
Elymus Lanceolatus	Thickspike Wheatgrass	8.00	28.28
Elymus smithii	Western Wheatgrass	9.00	26.03
Elymus stachycaulus	Slender Wheatgrass	8.00	29.38
TOTALS		26.30	102.78

R645-301-341.220. METHODS USED IN PLANTING AND SEEDING

All reclaimed areas will be stabilized by gouging prior to reseeding. The gouging will be done with a backhoe or trackhoe, and will consist of gouges at least 18" deep by 14" - 36" wide, spaced approximately 6' - 10' apart. The gouging precludes the use of a drill-seeder; therefore, all areas will then be hydroseeded and hydromulched.

R645-301-341.230. MULCHING TECHNIQUES

Vegetative cover will be promptly re-established following cessation of mining activities to stabilize erosion. Re-seeding will occur during the first normal period for favorable growth following regrading. Mulch will be applied to all reseeded areas. Areas which are hydromulched will be done so using an organic type mulch at the rate

of one ton per acre. Where hydroseeding and hydromulching occur, a tackifier will be added to both the seed and the mulch.

Mulch will be used wherever seeds are planted. These areas are shown on Plate 9 and constitute 60.94 acres.

R645-301-341.240. IRRIGATION AND PEST CONTROL MEASURES

Management Practices, e.g., Irrigation, Pest, and Disease Control

No mechanical irrigation will be used because of the lack of water in the area. Vegetative growth will be subject to normal rainfall and winter snowfall. Vegetation will be protected from both wildlife and livestock by drift-fences until the reclaimed areas have been adequately re-established. Upon approval, the fences will be removed. Fences are already standing surrounding the permit area. Pesticides and herbicides will be issued as necessary. Should any persistent pesticides be needed, the Division's approval will be obtained prior to their use.

To date, Andalex has had no use for poisons for rodent control or any other persistent pesticide.

Also see R645-301-240

R645-301-341.250. METHODS USED TO DETERMINE REVEGETATION SUCCESS

Revegetation will be closely monitored. Areas which fail to support sufficient growth to stabilize conditions will be tested and reseeded until a proper cover is established. Physical examinations will be conducted to note any species which are not thriving or regenerating. If this occurs, species will be substituted at the recommendation of the regulatory authority. Any

other species will be added at the time of reclamation upon recommendation of the regulatory authority. All reclaimed areas will be monitored and maintained by the constant observation of Andalex until the surety release is granted. This will include slope staking on any sloped areas.

Revegetation monitoring parameters to be measured are growth rate, plant density and percent cover. We would expect to monitor or supervise monitoring at least monthly during the first two growing seasons. From experience with interim revegetation at the minesite, we have learned that two growing seasons are needed to establish any success. After this we would know whether reclamation was progressing successfully.

Andalex is committed to quantitative sampling of reclamation cover, frequency and woody plant density during years 2, 3, 5, 9, and 10. Productivity will be sampled only during years 9 and 10. The reference area will be sampled during years 9 and 10.

R645-301-341.300. STUDIES AND TESTING TO DEMONSTRATE FEASIBILITY OF REVEGETATION PLAN

See R645-301-240.

R645-301-342. FISH AND WILDLIFE

FISH & WILDLIFE PLAN FOR THE RECLAMATION PHASE

There are several things that can be done to restore or improve the wildlife habitat at the time of final reclamation of the Wildcat Loadout. One of the most important is to return the disturbed land to the natural plant communities and wildlife habitats that existed in the area prior to disturbance caused by construction and subsequent loadout operations. State and federal regulations require that the restored plant communities have cover that is *"diverse, effective and permanent"*. The vegetative cover should be comprised of native plant species and be equal to the cover of the natural communities in the area. A reference area to be used for

final revegetation success standards has been established near the site (see *Plate 29, Vegetation Map of the Wildcat Loadout*). A report that describes this reference area and provides quantitative data from sampling the community is provided in a report included in this document called *Vegetation Sampling Results: Sagebrush/Grass Reference Area at the Wildcat Loadout ,2007 (see Appendix I , Supplement)*

Revegetation of the site will include restoration of plant species that are known to provide valuable habitat for the wildlife species mentioned above, plus other species that are supported in these habitats. For **mule deer** and **Rocky Mountain elk**, native plants that provide good cover and forage for these species will be established (see MRP Section R645-301-341).

As much as possible in-tack sagebrush stands in the permit area should be avoided to maintain current **sage-grouse** habitat. At final reclamation, disturbed sage-grouse habitat can also be restored and even improved in the area. For example, seed mixtures to restore lands disturbed by the loadout will include plant species that are used by the birds for food, cover and breeding. Also, because they provide perching structure for predatory species, single pinyon pine and Utah juniper trees scattered throughout sagebrush communities are known to discourage nesting by sage-grouse. To enhance sage-grouse nesting habitat within the permit area, the pine and juniper trees that have encroached some of the sagebrush communities in the permit area could be removed by equipment such as a track hoe using a large grapple claw. This equipment can easily pull the trees out of the ground, including the roots, with little damage to the plants next to them. Removing these perches would improve nesting habitat for sage-grouse birds.

R645-301-342.100. ENHANCEMENT MEASURES

Appendix F. Andalex will endeavor to use the best technology current available to enhance wildlife habitat during the reclamation phase of its operation. This will include, but not be limited to water sources (if available), thermal cover, escapeways, hiding and loafing places, and travelways. ANDALEX will consult with the Division of Wildlife Resources, at the time of final reclamation, to determine exactly what reclamation designs, planting arrangements, and artificial structures would best enhance a wildlife habitat.

R645-301-342.200. PLANT SPECIES SELECTION

See R645-301-310.

R645-301-342.210. NUTRITIONAL VALUE

Appendix E

R645-301-342.220. COVER AND PROTECTION

Appendix F

R645-301-342.230. ABILITY TO SUPPORT AND ENHANCE HABITAT

Appendix F

R645-301-342.300. CROPLAND

N/A

R645-301-342.400. RESIDENTIAL, PUBLIC SERVICE OR INDUSTRIAL LAND USE

N/A - The post mining land use does not include residential, public service or industrial use.

R645-301-350. PERFORMANCE STANDARDS

R645-301-351. GENERAL REQUIREMENTS

All loadout and reclamation operations will be carried out according to plans provided under R645-301-330 through R645-301-340.

R645-301-352. CONTEMPORANEOUS RECLAMATION

Contemporaneous revegetation at the Wildcat Loadout will occur on topsoil piles and sediment pond embankments. The vast majority of the site will remain disturbed to facilitate the operation, until final reclamation.

R645-301-353. REVEGETATION: GENERAL REQUIREMENTS

R645-301-353.100. VEGETATIVE COVER

The vegetative cover will be as stated in the following categories.

R645-301-353.110. DIVERSITY, EFFECTIVENESS AND PERMANENCe (Also R645-301-356 and 357)

The vegetative cover will be diverse, effective and permanent. Standards for reclamation success will be evaluated accordance with DOGM's "Vegetation Information and Monitoring Guidelines", Appendix A. The success of final reclamation will be judged on the effectiveness of the vegetation for the postmining land use and the extent of cover compared to the extent of cover for the reference area. Ground cover, production or stocking will be considered equal to the approved success standard when it reaches 90% of the success standard. Statistical adequacy of all statistical sampling will be determined using the following formula:

$$N_{min} - \frac{t^2 S^2}{(dx)^2}$$

where:

- t = the value from appropriate t-table*, (2-tail test for pre-mine studies, 1-tail test for success studies)
- s = the sample standard deviation,
- d = the desired change in the mean,
- x = the sample mean of the parameter in question
- * = All parameters are to be tested at the 90% confidence level with a 10% change in the mean (d = .1).

Ground cover will be estimated by using one of the methods listed in "Vegetation Information Guidelines" Appendix A.

Andalex does not propose to stock shrubs or trees during interim or final revegetation.

Production measurements will be made in accordance with DOGM's "Vegetation Information Guidelines" Appendix A. Estimates may be made by the methodology which the vegetation consultant feels is the most suitable method to used for the work being performed.

An evaluation of species composition will be made, including species present, form and diversity.

For a postmining land use of grazing and wildlife habitat, the ground cover and production will be equal to or greater that a reference area. The Division's "Vegetation Information Guidelines", Appendix A will be utilized for the evaluation of the success of revegetation. Appendix B will be references for calculating diversity.

Siltation structures will be maintained until the disturbed area is revegetated and stabilized. They will remain in place at least two years after the last augmented seeding. Siltation structures may include straw bales, silt fences or filter baskets. Removal will be contingent upon revegetation and stabilization of the area as well as DOGM concurrence. Following removal, the area will be revegetated in accordance with the reclamation plan.

R645-301-353.120. NATIVE OR DESIRABLE INTRODUCED SPECIES

The vegetative cover will be comprised of species native to the area, or of introduced species where desirable and necessary to achieve the approved postmining land use and approved by the Division.

(See R645-301-240)

R645-301-353.130. EXTENT OF COVER

The vegetative cover will be at least equal in extent of cover to the reference area.

R645-301-353.140. STABILIZING SOIL FROM SURFACE EROSION

The vegetative cover will be capable of stabilizing the soil surface from erosion. (See R645-301-240)

R645-301-353.200. REESTABLISHED PLANT SPECIES

The reestablished plant species will:

R645-301-353.210. COMPATIBILITY WITH APPROVED POST-MINING LAND USE

The reestablished plant species will be compatible with the approved postmining land use.

(See R645-301-240)

R645-301-353.220. SEASONAL CHARACTERISTICS OF GROWTH

The reestablished plant species will have the same seasonal characteristics of growth as the original vegetation.

(See R645-301-240)

R645-301-353.230. SELF-REGENERATION AND PLANT SUCCESSION

The reestablished plant species will be capable of self-regeneration and plant succession.

(See R645-301-240)

R645-301-353.240. COMPATIBILITY WITH AREA PLANT AND ANIMAL SPECIES

The reestablished plant species will be compatible with the plant and animal species of the area.

(See R645-301-240)

R645-301-353.250. COMPLIANCE WITH OTHER APPLICABLE LAWS OR REGULATIONS

The reestablished plant species will meet the requirements of applicable Utah and federal seed, poisonous and noxious plant; and introduced species laws or regulations. The seed tag will be provided to the Division, as requested.

R645-301-353.300. EXCEPTION TO REQUIEMENTS

N/A - No request for exception.

R645-301-353.400. CROPLAND

N/A - Crop land is not a post mining land use.

R645-301-354. REVEGETATION: TIMING

Disturbed areas will be planted during the first normal period for favorable planting conditions after replacement of the plant-growth medium. The normal period for favorable planting in this area is in the fall.

R645-301-355. REVEGETATION MULCHING AND OTHER SOIL STABILIZING PRACTICES

See R645-301-341.230.

R645-301-356 REVEGETATION: STANDARDS FOR SUCCESS

R645-301-356.100. EFFECTIVENESS OF VEGETATION FOR POST-MINING LAND USE

See R645-301-353.110

R645-301-356.110. STANDARDS FOR SUCCESS: GUIDELINES

See R645-301-240 and R645-301-353.110

R645-301-356.120. SAMPLING TECHNIQUES

See R645-301-353.110.

R645-301-356.200. CONDITIONS FOR SUCCESS

See R645-301-353.110.

R645-301-356.210. GRAZING OR PASTURE LAND

See R645-301-331 and R645-301-353.110.

R645-301-356.220. CROPLAND

N/A

R645-301-356.230. FISH AND WILDLIFE

See R645-301-353.110 and R645-301-331.

R645-301-356.231. STOCKING AND PLANTING

See R645-301-331

R645-301-356.232. TREES AND SHRUBS

See R645-301-331

R645-301-356.240. INDUSTRIAL, COMMERCIAL OR RESIDENTIAL

N/A

R645-301-356.250. PREVIOUSLY DISTURBED AREAS

See R645-301-240 and R645-301-331

R645-301-356.300. SILTATION STRUCTURES

See R645-301-240 and R645-301-310.

R645-301-356.400. REMOVAL OF SILTATION STRUCTURES

See R645-301-240 and R645-301-310.

R645-301-357. REVEGETATION: EXTENDED RESPONSIBILITY PERIOD

R645-301-357.100. BEGINNING OF EXTENDED RESPONSIBILITY PERIOD

See R645-301-240

R645-301-357.200. VEGETATION PARAMETERS FOR SUCCESS

See R645-301-240 and R645-301-341.250

R645-301-357.210. GREATER THAN 26.0 INCHES ANNUAL PRECIPITATION

N/A

R645-301-357.220. LESS THAN 26.0 INCHES ANNUAL PRECIPIATION

See R645-301-240 and R645-301-341.250.

R645-301-357.300. HUSBANDRY PRACTICES - GENERAL INFORMATION

R645-301-357.301. SELECTIVE HUSBANDRY PRACTICES

N/A - There are no selective husbandry practices requested at this time. Such selective practices cannot be determined until the property is reclaimed and reclamation success is evaluated.

R645-301-357.302. DEMONSTRATION OF PRACTICES

N/A

R645-301-357.303. BONDED AREA

N/A

R645-301-357.304. EXTENDED RESPONSIBILITY FOR RESEEDED AREAS

Per Division

R645-301-357.310. REESTABLISHING TREES AND SHRUBS

See R645-301-240.

R645-301-357.311. RATE OF REPLANTING

See R645-301-241.210.

R645-301-357.312. ESTABLISHMENT BY SEED

See R645-301-341.210.

R645-301-357.320. WEED CONTROL AND ASSOCIATED REVEGETATION

Management Practices, e.g., Irrigation, Pest, and Disease Control

No mechanical irrigation will be used because of the lack of water in the area. Vegetative growth will be subject to normal rainfall and winter snowfall. Vegetation will be protected from both wildlife and livestock by drift-fences until the reclaimed areas have been adequately re-established. Upon approval, the fences will be removed. Fences are already standing surrounding the permit area. Pesticides and herbicides will be issued as necessary. Should any persistent pesticides be needed, the Division's approval will be obtained prior to their use.

To date, Andalex has had no use for poisons for rodent control or any other persistent pesticide.

Also see R645-301-240

R645-301-357.321. CHEMICAL WEED CONTROL

See R645-301-240 and R645-301-357.320.

R645-301-357.322. MECHANICAL WEED CONTROL

See R645-301-240

R645-301-357.323. BIOLOGICAL WEED CONTROL

See R645-301-240

R645-301-357.324. RESEEDING DAMAGED AREAS

See R645-301-240

R645-301-357.330. CONTROL OF OTHER PESTS

See R645-301-357.320

R645-301-357.331. CONTROL OF BIG GAME

See R645-301-240

R645-301-357.332. CONTROL OF SMALL MAMMALS AND INSECTS

See R645-301-240

R645-301-357.341. AREA OF RESEEDING: NATURAL DISASTERS

See R645-301-240

R645-301-357.342. SUCCESS STANDARDS FOLLOWING A DISASTER

See R645-301-331

R645-301-357.343. TIMING OF RESEEDING FOLLOWING A DISASTER

See R645-301-240

R645-301-357.350. IRRIGATION

N/A - Not Planned

R645-301-357.360. RILL AND GULLEY REPAIR

See R645-301-212

R645-301-357.361. GREATER THAN 3% OF AREA

See R645-301-240

R645-301-357.362. EXTENT OF AFFECTED AREA

See R645-301-240

R645-301-357.363. AREA DEFINED BY RESEEDING

See R645-301-240

R645-301-357.364. RESULT OF DEFICIENT PLANS

See R645-301-240

R645-301-357.365. DEMONSTRATION OF METHOD

See R645-301-240

R645-301-358. PROTECTION OF FISH, WILDLIFE AND RELATED ENVIRONMENTAL VALUES

See R645-301-310

R645-301-358.100. ENDANGERED OR THREATENED SPECIES

See R645-301-310

R645-301-358.200. BALD OR GOLDEN EAGLES

See R645-301-310

R645-301-358.300. ENDANGERED SPECIES ACT

See R645-301-310

R645-301-358.400. WETLANDS/RIPARIAN VEGETATION

See R645-301-310

R645-301-358.500. BEST TECHNOLOGY CURRENTLY AVAILABLE

See R645-301-310

R645-301-358.510. MINIMIZE ELECTRICAL HAZARDS

See R645-301-310

R645-301-358.520. PASSAGE FOR LARGE MAMMALS

See R645-301-310

R645-301-358.530. PONDS CONTAINING HAZARDOUS OR TOXIC MATERIALS

See R645-301-310

ANDALEX RESOURCES, INC.

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 4, LAND USE

CHAPTER 4

TABLE OF CONTENTS

R645-301-400.	LAND USE AND AIR QUALITY	4-1
R645-301-410.	LAND USE	4-1
R645-301-411.	ENVIRONMENTAL DESCRIPTION	4-1
R645-301-412.	RECLAMATION PLAN	4-6
R645-301-413.	PERFORMANCE STANDARDS	4-8
R645-301-414.	PERMIT REVISIONS REQUESTING APPROVAL OF ALTERNATE POSTMINING LAND USE	4-9
R645-301-420.	AIR QUALITY	4-9
R645-301-421.	CLEAN AIR ACT AND OTHER APPLICABLE LAWS	4-10
R645-301-422.	UTAH BUREAU OF AIR QUALITY	4-10
R645-301-423.	SURFACE COAL MINING AND RECLAMATION ACTIVITIES EXCEEDING 1,000,000 TONS PER YEAR	4-10
R645-301-424.	FUGITIVE DUST CONTROL - SURFACE COAL MINING AND RECLAMATION OPERATIONS LESS THAN 1,000,000 TONS PER YEAR	4-16
R645-301-425.	AIR QUALITY MONITORING - SURFACE COAL MINING AND RECLAMATION OPERATIONS LESS THAN 1,000,000 TONS PER YEAR	4-16

CHAPTER 4, LAND USE & AIR QUALITY

NOTE TO REVIEWERS: The Wildcat MRP was recently re-formatted to the newer R645 regulations. This reformatted MRP was recently approved and incorporated on May 17, 2006. The current amendment is referred to as the 2008 Modification Plan and consists of three components, namely; 1) addressing Division Order DO-04 regarding wind-blown fines, 2) expanding the primary coal storage pad by about 3.5 acres, and 3) provide for a new material storage area of about 6 acres located on the west side of the facility.

Because the Wildcat MRP was recently reformatted and approved, every effort has been made in this amendment to minimize text changes, as pertains to responses to specific regulations, except where necessary to avoid inconsistencies and contradictions, and to make the response germane to the inclusion of the 2008 Modification Plan. Where appropriate, response to individual regulations regarding the proposed 2008 Modification Plan amendment includes reference to Appendix S. This appendix contains a detailed description of the amendment and is presented in a narrative that integrates the various components which are normally addressed in the separate chapters. Within the chapters themselves, all new discussion relevant to the 2008 Modification Plan amendment is presented in italics to easily differentiate it from the previously approved and reformatted text. The submittal also utilizes the standard "redline/strike-out" to aid in the review.

R645-301-400. LAND USE AND AIR QUALITY

R645-301-410. LAND USE

R645-301-411. ENVIRONMENTAL DESCRIPTION

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

R645-301-411.100. PREMINING LAND USE INFORMATION

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

R645-301-411.110. USES OF THE LAND AT THE TIME OF FILING APPLICATION

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

The area is ten miles from Price, but the unavailability of water precludes any development for residential or summer homes.

R645-301-411.120. LAND USE DESCRIPTION IN CONJUNCTION WITH OTHER ENVIRONMENTAL RESOURCES INFORMATION

Livestock grazing has been the most intense use of the permit area.

Mule deer are found within the lease area as well as the usual small mammals, predators, and passerine and raptorial birds.

Outdoor recreation in the lease area is limited and usually related to enjoyment of the open space and associated scenic facilities and hunting for wild animals.

R645-301-411.130. EXISTING LAND USES AND LAND USE CLASSIFICATION

See R645-301-411.110

R645-301-411.140. CULTURAL AND HISTORIC RESOURCES INFORMATION

To assure that no archaeological or historical sites existed in the proposed permit area a reconnaissance survey has been conducted.

This survey was conducted based on requirements of the Bureau of Land Management prior to the issuance of the right-of-way. All of the surface within this permit area is under the jurisdiction of the Bureau of Land Management.

Prior to this investigation, no recorded archaeological studies of any kind had ever been one in the survey area. Please see *the Confidential Binder.*

Archaeological clearance was granted based on this survey.

Regarding the 2008 Modification Plan project area, the BLM Environmental Analysis (Appendix T) states the following:

> ***"Cultural and Historic Preservation.***
> *The culture history for the current project area is an extension of that described for the Price Coalbed Methane Gas project in the Final Environmental Impact Statement (BLM 1997a) That document describes the 12,000-year culture History for the entire field. That document is supplemented by the Cultural Resource Management Plan, which provides guidance for evaluation and treatment of cultural resources discovered during intensive cultural resource inventories in the areas of potential effect from the proposed undertaking (Späth 1999). The CRMP has been formalized in a Programmatic Agreement (BLM 1997b).*
>
> *SENCO-PHENIX conducted an extensive file search at the BLM Field Office in Price, Utah and also consulted the early GLO maps (1930) and the early U.S.G.S. map (1916). SENCO-PHENIX then surveyed ca. 55 acres within the project area. The remaining 43 acres has been covered by previous archeological surveys (Senulis 2000, 2001; Mrstik and Montgomery 2005). No new cultural resources were discovered by the current survey (Senulis 2006).*
>
> *Archeological sites or districts are eligible for the NRHP under the following criterion:*
>
> *Criterion A: Event. This refers to a specific event such as the founding of a town or a series of events such as the development of a lifestyle. (NPS: Bulletin #15:11-13) The Utah Railway (42CB1258) built in 1912 to 1914 is eligible under this criterion for its significance to the economic development of the Price Basin. The Utah railway is west of the current project area and will not be impacted by this project.*
>
> *Criterion B: Person. This criterion applies to individuals who can be determined to be significant in our past. (NPS: Bulletin #15:14-16) There are no sites near the project area that meet this criterion.*
>
> *Criterion C: Design/Construction. This criterion applies to properties "significant for their physical design." (NPS: Bulletin #15:17-20) There are no sites near the project area that meet this criterion*".

NOTE: A more contextual description of the 2008 Modification Plan can be found in Appendix S. Archeological clearance reports for the coal pad extension area and the material storage areas can be found in the Confidential Binder.

R645-301-411.141. CULTURAL AND HISTORIC

RESOURCES MAPS

See *the Confidential Binder*

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

N/A - There are no public parks in the proposed permit area or nearby vicinity. No other cultural or historical resources are known to exist in the area.

R645-301-411.141.2 CEMETERIES

N/A - 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)

See *the Confidential Binder*

R645-301-411.142.1 PREVENTION OF ADVERSE IMPACTS

See *the Confidential Binder*

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

See *the Confidential Binder*

R645-301-411.143 IMPORTANT HISTORIC AND ARCHAEOLOGICAL RESOURCES THAT MAY BE ELIGIBLE FOR LISTING ON THE NATIONAL REGISTER OF HISTORIC PLACES

N/A - See *the Confidential Binder*

R645-301-411.143.1 COLLECTION OF ADDITIONAL INFORMATION

See *the Confidential Binder*

R645-301-411.143.2 CONDUCTING FIELD INVESTIGATIONS

See *the Confidential Binder.*

R645-301-411.143.3 OTHER APPROPRIATE ANALYSES

See *the Confidential Binder.*

R645-301-411.144. APPROPRIATE MITIGATION AND TREATMENT MEASURES

See *the Confidential Binder*.

R645-301-411.200. PREVIOUS MINING ACTIVITY

No mining ever occurred at this site. The area was used as a coal processing and loadout facility.

R645-301-411.210. TYPE OF MINING METHOD USED

Area was used as a processing/loadout facility.

R645-301-411.220. COAL SEAMS OR OTHER MINERAL STRATA MINED

N/A

R645-301-411.230. EXTENT OF COAL OR OTHER MINERALS REMOVED

N/A

R645-301-411.240. APPROXIMATE DATES OF PAST MINING

The loadout area was used from approximately 1960 to present under various operators.

R645-301-411.250. USES OF LAND PRECEDING MINING

See R645-301-411.140.

R645-301-412. RECLAMATION PLAN

See R645-301-240.

R645-301-412.100. POSTMINING LAND USE PLAN

The post-mining land use will consist of livestock grazing with wildlife habitat and some recreation.

R645-301-412.110. ACHIEVEMENT OF PROPOSED POSTMINING LAND USE

See R645-301-412.100.

R645-301-412.120. RANGE OR GRAZING LAND USE

See R645-301-412.100.

R645-301-412.130. ALTERNATE POSTMINING LAND USE

N/A

R645-301-412.140. CONSISTENCY WITH SURFACE OWNER PLANS AND APPLICABLE UTAH AND LOCAL LAND USE PLANS

Socioeconomic Impacts

The proposed project is located in an area where coal mining is the major industry, therefore, the community is geared for coal operations. The labor supply is excellent, well-trained, and available. Most people in this area have a very favorable attitude towards the increased coal activity. They look forward to growth in the area which will increase population, home construction, and provide other facilities for community use.

The need for development of additional housing, school space, and changes in present community services would be among the greatest impacts, due to the increase in population. Positive effects of the project will be to increase the number of jobs, payroll, and taxes thus helping to build the community.

Land Use Changes

The limited resources, both physical and scenic, will dictate no future change in land status. Considering the extent and

nature of similar lands in this area, no uses other than those previously discussed can be forecast.

Wildcat has been unsightly since coal loading activities began with the Swisher Coal Company. The new loadout is in the same area as the old tipples and waste dumps. These waste dumps are numerous and located throughout the permit area and consist of coal fines which were unmarketable during the earlier mining history. This new operation will actually be a significant reclamation phase to the permit area.

After completion of loading operations, the land will continue to be used for grazing and hunting. Although hunting may occur within the permit area during operations, grazing will not. No future change is dictated in the land status. All disturbed land will be restored in a timely manner, according to the Reclamation Plan outlined in Chapter 5, to conditions that are capable of supporting the uses they were capable of supporting before mining.

Regarding the 2008 Modification Plan project area, the BLM Environmental Analysis (Appendix T) states the following:

*"**Relationship to Statutes, Regulations, or Other Plans:***

The area of the PA is located upon federal lands administered by the BLM Price Field Office (PFO). Various federal, state, local and private statutes, permits and easements will be required for actions associated with the proposed development.

The granting of the ROW by the BLM is pursuant to the requirements of Title 5 of the FLPMA, and regulations found within Title 43 of the Code of Federal Regulations (CFR), part 2800. These requirements will cover all actions proposed that are off the coal lease area with the exception of portions of the existing road that may be considered a county road.

The ROW is directly tied to the processing of coal subject to coal leases and would be administered under the requirements of the Mineral Lease Act of 1920 (MLA), and regulations found within Title 30 of the CFR (U.S.C. 181-287). The proposed project is under the sole jurisdiction of the BLM, as it relates to Federal lands.
The area of the PA is zoned as MG-1, mining and grazing, by the Carbon County Zoning and Planning Office, and is consistent with the existing land use plan for the county."

NOTE: A more contextual description of the 2008 Modification Plan can be found in Appendix S.

R645-301-412.200. LAND OWNER OR SURFACE MANAGER COMMENTS

As there are no proposed land use changes, there have been no negative comments from legal or equitable owners of record of surface areas to be affected or from any state or local agencies.

R645-301-412.300. SUITABILITY AND COMPATIBILITY

See R645-301-412.200.

R645-301-413. PERFORMANCE STANDARDS

R645-301-413.100. POSTMINING LAND USE

See R645-301-412.100.

R645-301-413.110. CAPABILITY OF SUPPORTING POSTMINING LAND USE

See R645-301-412.100.

R645-301-413.120. HIGHER OR BETTER USES

See R645-301-412.100.

R645-301-413.200. DETERMINING PREMINING USES OF LAND

See R645-301-412.100.

R645-301-413.210. PREMINING USES OF LAND NOT PREVIOUSLY MINED

See R645-301-412.100.

R645-301-413.220. POSTMINING LAND USE FOR LAND THAT HAS BEEN PREVIOUSLY MINED AND NOT RECLAIMED

See R645-301-412.100.

R645-301-413.300. CRITERIA FOR ALTERNATIVE POSTMINING LAND USES

N/A

R645-301-413.310. LIKELIHOOD FOR ACHIEVEMENT LAND USE

Post-mining land use as proposed shall be achieved.

R645-301-413.320. HAZARDS TO PUBLIC HEALTH OR SAFETY, OR THREAT OF WATER DIMINUTION OR POLLUTION

N/A

R645-301-413.330. PROHIBITED LAND USES

N/A

R645-301-413.331. IMPRACTICAL OR UNREASONABLE

N/A

R645-301-413.332. INCONSISTENT WITH APPLICABLE LAND USE POLICIES

N/A

R645-301-413.333. UNREASONABLE DELAY IN IMPLEMENTATION

N/A

R645-301-413.334. VIOLATION OF FEDERAL, UTAH OR LOCAL LAW

N/A

R645-301-414. PERMIT REVISIONS REQUESTING APPROVAL OF ALTERNATE POSTMINING LAND USE

N/A

R645-301-414.100. FILING DEADLINES

N/A

R645-301-414.200. SIGNIFICANT ALTERATION FROM MINING OPERATIONS IN THE ORIGINAL PERMIT

N/A

R645-301-414.300. OTHER REQUIREMENTS

N/A

R645-301-420. AIR QUALITY

(Also R645-301-421, 422 and 423)

Existing Environment

The permit area is located in a Class II air quality area.

Air Quality Impact Analysis

Air quality information has been submitted and approved by the State Bureau of Air Quality. See Appendix B.

The existing Air Quality Approval Order (DAQE-005-00) provides for a maximum coal stockpile area of 20 acres. ~~Although the present stockpile area is well below this figure, there is a potential for the required stockpiles to increase up to, and even beyond, the present approved area; therefore,~~ Andalex Resources, Inc. has submitted a request for modification of its Approval Order to provide for additional stockpile area, as well as increased tonnage and diesel usage. The length of the haul road has not been changed at this time, since no changes in haul roads have taken place since the approval. Haul road lengths will change with the future expansion plans, and will be addressed with a revised Air Quality Plan at that time.

Emission Estimates

Andalex's inventory has been reviewed and approved by the Utah Bureau of Air Quality and the E.P.A.

PSD Permit and Compliance with Air Quality Laws

The Environmental Protection Agency has determined that this project does not require a PSD Air Quality Permit. The

loadout is not subject to the PSD regulations because of the new definition of a major source.

R645-301-421. CLEAN AIR ACT AND OTHER APPLICABLE LAWS

See R645-301-420.

R645-301-422. UTAH BUREAU OF AIR QUALITY

See R645-301-420.

R645-301-423. SURFACE COAL MINING AND RECLAMATION ACTIVITIES EXCEEDING 1,000,000 TONS PER YEAR

See R645-301-420.

R645-301-423.100. COMPLIANCE WITH FEDERAL AND UTAH AIR QUALITY STANDARDS

See R645-301-420.

R645-301-423.200. FUGITIVE DUST CONTROL PLAN

The Wildcat Loadout and surrounding area were impacted by a previous pre-law operator. This operation left a fair amount of the existing permit area, as well as an unknown amount of the adjacent, undisturbed area, impacted by accumulations of coal fines. After Andalex Resources, Inc. took over the site, the operation was permitted under SMCRA and obtained an Air Quality Approval Order. The problem of coal fine accumulation on, and around, this area has been addressed by Andalex since the beginning of the Wildcat Loadout operation, and has included remedial measures such as scraping coal off previously impacted areas to salvage topsoil, and vacuuming coal fines from undisturbed, impacted areas to protect soils and vegetation. In addition, Andalex Resources, Inc. has implemented a considerable number of dust control measures at the Wildcat Loadout to reduce fugitive dust and wind-blown coal fines. The following are some of the measures incorporated into the design and operation of the facility to reduce dust emissions:

(1) All roads are paved or gravel surfaced;
(2) Road speed limits are posted at 5 mph;

(3) Roads are chemically treated and watered on a regular basis;
(4) Truck dump hoppers are located below ground and equipped with sprays;
(5) Coal is recovered from stockpiles via underpile reclaim systems;
(6) All surface conveyors are covered;
(7) Conveyor transfer points are enclosed;
(8) Radial stackers load at the highest point of the pile to minimize drop distances;
(9) Railcars are loaded from an enclosed bin and extendable chute;
(10) Refuse pile is regularly compacted and watered as needed;
(11) Coal moisture is maintained at a minimum of 6% overall;
(12) Moisture content of minus 40 mesh coal is at least 4.0% by weight;
(13) All disturbed areas are drained to sedimentation ponds;
(14) Runoff from ASCA areas is controlled by containment, vegetation, silt fences and/or straw bales;
(15) Wind fences are employed along the eastern edge of the largest stockpile, near Pond B;
(16) The location of stockpiles (more to the west) helps confine the wind-blown coal fines within the permit area.

The designs of the various controls listed above have been provided in the following sections of this permit:

(1) Impoundments/Hydrology - R645-301-512.240
(2) Roads - R645-301-512.250
(3) Operations - R645-301-520
(4) Coal Handling - R645-301-521.

~~While the above controls and practices are designed to minimize fugitive dust and wind-blown coal fines, it is impossible to completely eliminate them. As a result, some soils and vegetation will be impacted by dust accumulations in the future. To minimize these impacts, Andalex Resources, Inc. proposes vacuuming of coal fine accumulations on undisturbed areas within the permit area either prior to salvage of the topsoil or prior to reclamation/reseeding. Vacuuming is considered by Andalex as the best and least destructive option for removal of coal fine accumulations.~~

~~There is also some potential for coal dust to be blown beyond the permit boundary under extreme wind conditions.~~

~~There is evidence of coal dust outside the permit area, but the time and source of these accumulations are unknown. Andalex Resources, Inc. is therefore proposing to conduct a program to monitor coal fine deposition outside the permit area, specifically east of the permit boundary. The proposed monitoring is described in Appendix P, Response to Division Order DO-04, by Patrick D. Collins, Ph.D.~~

For the 2008 Modification Plan project area the following discussion of controlling wind-blown fines is taken from Appendix S:

"On August 9, 2004, the Division issued Order DO-04 which requires Andalex to address the issue of wind-blown fines arising from the operation of the loadout facility, primarily from the stockpiles and stackers, and from truck traffic on the roads. Over the past 24 years of operation, coal fines have drifted onto the undisturbed topsoil downwind from the primary coal storage area, and in some areas have blown beyond the existing DOGM permit area. This has involved certain areas within the eastern part of the property which are down-wind from facilities in the direction of the prevailing winds in this area.

On February 5, 2007 the BLM approved an amendment to Right-of-Way U-48027 which expanded the size of the grant from 100 acres to 270 acres (See Appendix B-12A and Plate 1). (It is important to note that this is a non-exclusive areal right-of-way, and that there are numerous other equally valid rights-of-way which occupy much of this same area. For example, overlapping rights-of-ways exist for the Utah Railway tracks, the State Highway 139, the Carbon County Consumers Road, the by-pass road, the Trestle public road, Rocky Mountain Power 46 KV powerline, Phillip Petroleum's gas well and pipeline corridor, and Hidden Splendor shop facility. BLM determined the final 270 acre configuration in part to "square up" the boundary for administrative purposes. Being a non-exclusive right-of-way means there is no conflict among grantees, and no inherent liability from one grantee to the next, as long as each grantee's activities are within the terms of their respective right-of-way.) Most of the increased area of the expanded right-of-way was on the east side of the property where the accumulated coal fines were at issue. Indeed, the primary reason for granting the expanded right-of-way was to allow additional area to construct drainage control structures to confine and contain the wind-blown coal fines. The Environmental Analysis prepared by the BLM addressed the issue specifically (See Appendix T). The overall concept approved by the BLM included the construction of diversion ditches around the perimeter of the accumulation

zone, leading to new sediment ponds located down-drainage from the existing ponds. In this manner no wind-blown coal fines would leave the property, and no coal fines would make their way into any of the undisturbed natural drainages.

In addition to preventing the fines from leaving the property it was also necessary to address the issue of the coal fines which had accumulated on the existing undisturbed topsoil located near the downwind side of the coal storage pile. To better quantify the areal extent and depth of the coal fines accumulation E.I.S. (Environmental Industrial Services) conducted an intensive survey of the area (see Appendix U). More than 300 locations were surveyed for fines accumulation, and a map was prepared which depicts the results. The study showed that the majority of the fines were deposited within 150' of the existing coal storage area, with highest concentration occurring in the topographic low depression area in which existing Sediment Pond B is located. The rate of accumulation generally decreases exponentially with distance from the coal-pile area.

In consultation with Division staff, it has been determined that the most effective means of addressing the Division order is through a two-phase construction approach;

1) Phase 1 construction would be initiated immediately upon approval of the plan, and would done specifically to address the Division order.

2) Phase 2 construction would be involve the larger project of expanding the coal storage area. This phase 2 expansion project could be done immediately upon approval of the plan, or could be done at a latter date depending on a combination of variable factors such as mine production, sales contracts, coal quality blending requirements, weather constraints and other operational considerations. Elements of phase 2 construction are designed to mi

2) PHASE 1, OVERVIEW:

Phase 1 construction focuses on the drainage area around and below existing Sediment Pond B. As mentioned previously, this is the area where the most of the coal fines accumulation is concentrated, and is the area that was mainly responsible for the issuance of the Division Order. Therefore, phase 1 construction is the primary instrument for addressing the existing coal fines situation cited in the Order. During this phase a new, larger Sediment Pond G-1 would be constructed down-drainage from existing Pond B, immediately west of the Trestle road and adjacent to the existing gas-well disturbed area. This new Pond G-1 would serve as a replacement for Pond B. After Pond G-1 has been constructed and is operational

Pond B can be removed. The coal fines in this depressional area above and below Pond B would then be removed with mechanical equipment (grader, backhoe, etc) and hauled to the coal stockpile where it would be blended with ROM coal. During removal of the coal fines care would be taken to minimize disturbance of the underlying topsoil.

After the coal fines have been removed, topsoil in this area would then be salvaged to a depth of 24 inches. Salvaged topsoil will be stored within the outer embankment of the new Pond G-1 impoundment structure as shown on Plate 3d-a.

Prior to any construction, interim sediment control structures will be put in place. These will include silt fences and/or straw bales located down-drainage from any new construction to ensure that no untreated drainage leaves the permit area. In total, phase 1 construction would involve about 3.5 acres of additional surface disturbance, including the new drainage area into Pond G-1, and the pond impoundment itself. It should be noted that Pond G-1 is designed and will be constructed to accommodate the additional disturbed area associated with phase 1 construction. However, under phase 2 construction, as described below, Pond G-1 will be enlarged into Pond G.

An additional source of dust is PR 5, which is the access road around the eastern edge of the existing coal-pile area. This road was never initially intended to accommodate heavy truck traffic, but has recently been pressed into service because of the increased production from the mines, and contract commitments that require segregated storage for certain customers. Presently the road is built on native material, which contributes to the dusting situation. Under phase 1 the truck haul portion of this road, as well as the ramp leading up to the coal pad, will be graveled to provide a suitable roadbase. This newly graveled portion will then be treated with mag chloride and/or water as necessary in the future to control fugitive dust. Also, a travelway will be maintained around the outer perimeter of the existing coalpad where truck travel will be maintained as much as possible for those trucks which load and unload near the live storage of the coalpile. This perimeter travelway, which will be part of the operational pad, will also be treated with water as needed to control fugitive dust. Speed limits of 5 mph on and around the pad will be enforced also for dust control. Refer to Plate 1A-a for an overview of phase 1 construction.

3) PHASE 2, OVERVIEW:

Phase 2 construction provides for enlarging the coal storage pad. As a subset of the construction plan, phase 2 would also incorporate additional features to minimize future impacts from wind-blown and/or water transported coal fines. In consultation with Division staff it was determined that the most effective means of protecting the resources within the Phase 2 construction area was to strip the topsoil in this area and stockpile it farther away from the coal storage facilities. This is to be done in a 150' wide swath around the eastern edge of the existing and proposed extended coal storage area. This area is shown on Plate 1A and is called the "drop zone".

The drop zone is intended not only as a topsoil salvage area but as a area where coal fines in the future can drop without harm to other resources. It should be noted that this new drop zone will be 150' beyond any existing or new coal-pile area, but because the coal storage area will itself be expanded to the east, the coal fines problem should be further alleviated because one source of airborne coal fines is the drop-point from the existing radial stacker. The drop zone will not only be 150' from the edge of the (new) coal-pile area but will be nearly 250' additionally removed from the existing stacker drop-point measured in the down-wind direction.

The expansion of the coal storage area and the creation of the 150' wide drop zone will require that Sediment Ponds A and B be removed. Under phase 2, three additional sediment ponds (Ponds G, H and I) will be constructed down-drainage from the drop zone (See Plate 1A). As noted previously, Pond G will be constructed as an enlargement of Pond G-1 constructed during phase 1. Even with the extended drop zone (and the increased distance away from the stacker drop-points) there is a possibility that some coal fines may still be blown beyond the drop zone, especially in the event of extraordinarily strong winds. Based on the existing surveys (which reflect nearly 25 years of previous operation experience at Wildcat) such future accumulations are expected to be slight. However, to insure that all wind-blown fines, however slight, are confined and contained within the property, a set of diversion ditches will be constructed (See Plates 1A and 2), and the new sed ponds will be located such that effectively all coal fines will be prevented from leaving the property and getting into the natural drainages downstream from the loadout facility.

The drop zone, the perimeter ditches and the new sediment

ponds are meant to control and treat much of the coal fines which originate from the coal-pile area and specifically from the stacker drop-points. As noted previously, an additional source of dust is PR 5, which is the access road around the eastern edge of the existing coal-pile area. . Under phase 1 this road will remain temporarily in its present location. Under phase 2 construction this road will be relocated as the coal storage area is expanded to the east. In either case, Andalex commits that the truck-haul portion of this road will be re-constructed with a substantial gravel base, and that the road will be treated with mag chloride and/or water as necessary in the future to control fugitive dust."

Appendix S also states the following:

1) Andalex will extend the permit boundary to the east (in the direction of the wind-blown fines) within the newly acquired BLM right-of-way. Within this expanded right-of-way and permit area Andalex will construct a series of new sediment ponds and perimeter ditches designed to contain and confine any future coal fines. This will ensure that there are no off-site impacts in the future.

2) Phase 1 construction will immediately remove the coal fines accumulated in the drainage area around and below Sediment Pond B. This is the area where most of the coal fines have accumulated over the years. A new larger Sediment Pond G-1 (to replace Pond B) will be constructed downstream in the same drainage, but far enough away to capture any coal fines that may accumulate in the future.

3) Under phase 1, the truck-haul portion of road PR-5, and the ramp leading to the coal pad, will be reconstructed with a substantial gravel base and will be chemically stabilized to control fugitive dust.

4) Additional resource protection measures will be adopted at such time as phase 2 construction is implemented in the future, Under phase 2 construction (i.e., coal storage pad expansion), in-place topsoil presently affected by windblown fines will be salvaged and stockpiled farther away from the existing coal piles and stacker drop points. This involves removal of topsoil along a 150' wide swath located downwind from, and along the eastern perimeter of the existing primary coal storage area. Field studies have shown that most of the wind-blown fines accumulation over the past 25 years of operation are confined within the region of this swath.

4) This 150' swath will serve as a drop-zone for the possibility of future accumulations. Prior to salvaging and stockpiling topsoil within the drop-zone, excessive existing coal fines will first be removed by scraping with heavy equipment.

5) After topsoil has been removed from the drop-zone the area will be roughened and re-seeded. This roughening will serve to minimize the downwind trans-migration of coal fines through the process of "ground hopping".

6) The newly established topsoil piles (located fro 150' to 450' farther away from the existing stacker drop points) will be constructed with a 6" protective outer layer of additional suitable soil material, in the unlikely event that some coal fines still manage to make it to the new piles. The protective covering can be removed at time of final reclamation if it is determined that it has accumulated too many coal fines to be used as topsoil.

9) Andalex will establish a monitoring program to determine the extent of future wind blown fines, and evaluate the success of the implemented measures. Andalex will contract E.I.S Environmental Consultants (or other qualified environmental consultants) to conduct a post-construction survey to be used as a baseline. These field surveys will then be done prior to each permit renewal and will employ similar protocol as the original survey (see Appendix U). The consultants will generate a report describing their findings and this report will be provided to the Division.

NOTE: A more contextual description of the 2008 Modification Plan can be found in Appendix S.

R645-301-424. FUGITIVE DUST CONTROL - SURFACE COAL MINING AND RECLAMATION OPERATIONS LESS THAN 1,000,000 TONS PER YEAR

N/A - Greater than 1,000,000 ton/yr.

R645-301-425. AIR QUALITY MONITORING - SURFACE COAL MINING AND RECLAMATION OPERATIONS LESS THAN 1,000,000 TONS PER YEAR

N/A

ANDALEX RESOURCES, INC.

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 5, ENGINEERING

CHAPTER 5

TABLE OF CONTENTS

R645-301-500.	ENGINEERING	5-1
R645-301-510.	INTRODUCTION	5-1
R645-301-511.	GENERAL REQUIREMENTS	5-6
R645-301-512.	CERTIFICATION	5-6
R645-301-513.	COMPLIANCE WITH MSHA REGULATIONS AND MSHA APPROVALS	5-74
R645-301-514.	INSPECTIONS	5-75
R645-301-515.	REPORTING AND EMERGENCY PROCEDURES	5-77
R645-301-516.	PREVENTION OF SLIDES	5-79
R645-301-520.	OPERATION PLAN	5-79
R645-301-521.	GENERAL	5-79
R645-301-522.	COAL RECOVERY	5-95
R645-301-523.	MINING METHOD(S)	5-95
R645-301-524.	BLASTING AND EXPLOSIVES	5-96
R645-301-525.	SUBSIDENCE	5-96
R645-301-526.	MINE FACILITIES	5-96
R645-301-527.	TRANSPORTATION FACILITIES	5-98
R645-301-528.	HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL, AND COAL MINE WASTE	5-100
R645-301-529.	MANAGEMENT OF MINE OPENINGS	5-102
R645-301-530.	OPERATIONAL DESIGN CRITERIA AND PLANS	5-103
R645-301-531.	GENERAL	5-103
R645-301-532.	SEDIMENT CONTROL	5-103
R645-301-533.	IMPOUNDMENTS	5-103

R645-301-534.	ROADS	5-105
R645-301-535.	SPOIL	5-107
R645-301-536.	COAL MINE WASTE	5-108
R645-301-537.	REGRADED SLOPES	5-110
R645-301-540.	RECLAMATION PLAN	5-110
R645-301-541.	GENERAL	5-110
R645-301-542.	NARRATIVES, MAPS AND PLANS	5-117
R645-301-550.	RECLAMATION DESIGN CRITERIA AND PLANS	5-121
R645-301-551.	CASING AND SEALING OF UNDERGROUND OPENINGS	5-122
R645-301-552.	PERMANENT FEATURES	5-122
R645-301-553.	BACKFILLING AND GRADING	5-122
R645-301-560.	PERFORMANCE STANDARDS	5-126

CHAPTER 5, ENGINEERING

NOTE TO REVIEWERS: The Wildcat MRP was recently re-formatted to the newer R645 regulations. This reformatted MRP was recently approved and incorporated on May 17, 2006. The current amendment is referred to as the 2008 Modification Plan and consists of three components, namely; 1) addressing Division Order DO-04 regarding wind-blown fines, 2) expanding the primary coal storage pad by about 3.5 acres, and 3) provide for a new material storage area of about 6 acres located on the west side of the facility.

Because the Wildcat MRP was recently reformatted and approved, every effort has been made in this amendment to minimize text changes, as pertains to responses to specific regulations, except where necessary to avoid inconsistencies and contradictions, and to make the response germane to the inclusion of the 2008 Modification Plan. Where appropriate, response to individual regulations regarding the proposed 2008 Modification Plan amendment includes reference to Appendix S. This appendix contains a detailed description of the amendment and is presented in a narrative that integrates the various components which are normally addressed in the separate chapters. Within the chapters themselves, all new discussion relevant to the 2008 Modification Plan amendment is presented in italics to easily differentiate it from the previously approved and reformatted text. The submittal also utilizes the standard "redline/strike-out" to aid in the review.

R645-301-500. ENGINEERING

R645-301-510. INTRODUCTION

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

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

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

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

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

Surface water monitoring stations are included on Plate 2.

Subsurface water has not been encountered within the permit area and the only surface water would consist of sediment ponds and diversion ditches which become surface waters only in direct response to a precipitation event. These, along with the one spring located southwest of the permit area, are shown on Plate 2 and Figure VII-2 respectively.

~~There are no oil or gas wells in or adjacent to this permit area.~~ *There is a gas well drill site located near the southeast part of the facility, adjacent to the public road. The drillhole has been capped and the site has been reclaimed. This work was done by Conoco-Phillips.*

Slopes are represented by topographic maps (Plate 1) and final reclamation contours (Plate 9). ~~The cross-sections, through these two topographic maps, are shown on Plate 10. From this, a mass balance was developed.~~

Operation Plan: Maps and Plans

The lands affected by this operation (surface only) are clearly shown on Plate 1. Plate 1 depicts all buildings, utilities, and facilities. ~~All of the land within this permit area which is to be affected already has been.~~ This is a surface facility only and involves no underground workings. The bond required by the Division is for the entire affected area including all the surface facilities.

The permit area shown on Plates 1, 1A and 16 contains 270 acres, *and coincides with the BLM right-of-way (U-48027)*

boundary. It is important to note that this is a non-exclusive areal right-of-way, and that there are numerous other equally valid rights-of-way which occupy much of this same area. For example, overlapping rights-of-ways exist for the Utah Railway tracks, the State Highway 139, the Carbon County Consumers Road, the by-pass road, the Trestle public road, Rocky Mountain Power 46 KV powerline, Phillip Petroleum's gas well and pipeline corridor, and Hidden Splendor shop facility. BLM determined the final 270 acre configuration in part to "square up" the boundary for administrative purposes. Being a non-exclusive right-of-way means there is no conflict among grantees, and no inherent liability from one grantee to the next, as long as each grantee's activities are within the terms of their respective right-of-way.) The bonded area shown on Plates 1 and 1A is 81.79 acres. This represents the actual (and proposed) disturbed area consisting of 75.33 acres of operational areas which will eventually be re-topsoiled and 6.46 acres which are occupied by topsoil storage piles during the interim. ~~including 17.51 acres of ASCA's and excluding 2.78 acres of Utah Railway track. The disturbed area shown on those maps is 60.94 acres. This acreage represents all actual disturbed areas within the site, and does not include the ASCA's or the Utah Railway track. The 60.94 acres of disturbed area also represents the area where topsoil (or substitute topsoil) will be placed upon final reclamation. ASCA's are excluded from this figure since topsoil has not been removed from those areas~~ The track is excluded since it will remain after reclamation

Coal storage, topsoil storage, loading areas, coal preparation waste areas are all depicted on the surface facilities map. Additional detail on topsoil, diversions, and ponds can be found in Volume II on Plates *2, 13A, 13B, 13C, 2, and 3A through H, in Appendix R, and in Appendix S.*

There is no storage of explosives at the Wildcat Loadout.

The final surface configurations will be similar to the surface prior to Andalex's involvement at Wildcat, *as shown on Plate 9.* ~~Cross sections and a surface configuration plate are included in Volume II as 10 and 9 respectively.~~

Surface water monitoring locations are shown on Plate 2.

After the completion of activities at this facility, no structures will remain with the exception of the railroad grade, the tracks, and it's associated drainage structures.

All maps requiring certifications by a registered person

have been done so. Included are stamps from experts in related fields such as surveying.

Maps and Plans

The following is a list of maps and plans included with this application as Volume II. Those maps which require certification by a registered professional engineer bear that mark. These maps and plans, when used in conjunction with Volume I (the text), will constitute a complete plan for the Wildcat Loadout Facility. ~~As this facility has already been completely constructed, the maps do not include any "as proposed" facilities, only existing ones~~. *Refer to Appendix S for information regarding proposed construction associated with the 2008 Modification Plan.* Along with the facilities, plates are included, environmental resource maps, and reclamation plans. It should be noted that a wildlife distribution map is not included based on the State Division of Wildlife Resources' comments (please see Appendix F).

PLATES

PLATE #	PLATE TITLE
Plate 1	Existing Surface Facility Map
Plate 1A	Proposed Surface Facility Map
Plate 2	Drainage Map
Plate 3A	Sediment Pond C
Plate 3B	Sediment Pond E
Plate 3C	Sediment Pond F
Plate 3D	Sediment Pond G
Plate 3E	Sediment Pond H
Plate 3F	Sediment Pond I
Plate 3G	Permanent Impoundment
Plate 3H	Depression Area
Plate 4	Deleted
Plate 5	Deleted
Plate 6	Deleted
Plate 7	Deleted
Plate 8	Reclamation Hydrology
Plate 9	Final Reclamation
Plate 10	Deleted
Plate 11	Soils Map
Plate 12	Geology Map
Plate 13A	Topsoil Piles
Plate 13B	Topsoil Piles
Plate 14	Deleted
Plate 15	Watershed Map
Plate 16	Surface and Subsurface Ownership Map
Plate 17	Typical Road Cross-sections
Plate 18	Deleted
Plate 19	Deleted
Plate 20	Deleted

R645-301-511. **GENERAL REQUIREMENTS**

See R645-301-510.

R645-301-511.100. **PROPOSED COAL MINING AND RECLAMATION OPERATIONS**

See R645-301-510.

R645-301-511.200. **POTENTIAL IMPACTS TO THE ENVIRONMENT**

See R645-301-510.

R645-301-511.300. **RECLAMATION**

See R645-301-240.

R645-301-512. **CERTIFICATION**

See Volume II and R645-301-510.

R645-301-512.100. **CROSS SECTIONS AND MAPS**

See R645-301-510.

R645-301-512.110. **MINE WORKINGS TO THE EXTENT KNOWN**

N/A - There are no mine workings associated with this project.

R645-301-512.120. **SURFACE FACILITIES AND OPERATIONS**

See Volume II, Plates 1 and 2. All applicable maps are certified.

R645-301-512.130. **SURFACE CONFIGURATIONS**

See Volume II, Plates 1 and 2. All applicable maps are certified.

R645-301-512.140. **HYDROLOGY** **(Also R645-301-722)**

Refer to Appendix R

R645-301-512.150. GEOLOGIC CROSS SECTIONS AND MAPS

See Volume II, Plate 12. All applicable maps are certified.

R645-301-512.200. PLANS AND ENGINEERING DESIGNS

Applicable plans, such as for impoundments and primary roads have been certified by a qualified, registered professional engineer and are included in the following sections.

R645-301-512.210. EXCESS SPOIL

N/A - There are no plans for excess spoil at this facility.

R645-301-512.220. DURABLE ROCK FILLS

N/A - There are no plans for durable rock fills at this facility.

R645-301-512.230. COAL MINE WASTE

This is strictly a surface facility, there will be no underground development wastes.

Coal Processing Waste **(Also R645-301-513.800, 536, and relevant portions of Sections R645-301-735, 736, 737, 745, 746, 747, and 754)**

During processing, a small amount of boney material and rock is removed from the lump coal product. It is currently proposed to dispose of this material on the west side of Wildcat in a previously disturbed area which reports to the sedimentation ponds.

In accordance with requirements of 30 CFR 77.215-2, a refuse disposal plan has been filed with MSHA. An MSHA I.D. number has been issued for this pile - 1211-UT-09-01864-01. The required disposal plan and maps are included as Appendix O of this M.R.P.

If it is determined through testing that this material is acid- or toxic-forming, then the disposal will consist of burial on the west side of Wildcat (Plate 1) or haulage to another approved coal processing waste disposal area. The Division will be notified if the coal processing waste is to be moved off-site to another approved disposal area. All coal processing waste piles shall be inspected at least quarterly, by a qualified registered engineer. This person will be responsible for inspecting visual factors such as

steepness of slopes and seepage. Copies of 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 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.

It should be emphasized that upon final reclamation any refuse material which has been used in a fill situation will be removed and placed in the approved refuse disposal area. It will not be reclaimed in-place.

It is estimated that there are presently approximately 54,500 cubic yards of coal waste material on site. Of this, approximately 10,000 cubic yards of material were used in fills, and the remaining 44.500 cubic yards are in the refuse pile. *Additional refuse material will be used in the coal pad expansion proposed as part of the 2008 Modification Plan as shown on Plate 1A and described in Appendix S, which states:*

"Additionally, some of the coal refuse material which is presently stored in the approved site on the west side of the facility may be hauled in to help build up the new coal storage pad. Use of this material is approved for such use under the currently approved plan, as described in Section R645-301-512-230, and has been done in the past. Analysis of this material shows that it is not toxic nor acid-forming (see Appendix O, Supplement). Potential sites of refuse fill are depicted on Plate 1A. (After the coal pad construction is completed a detailed survey of the refuse fill areas will be completed, and a new "as-built" map will be prepared of the fill areas and the main refuse pile so that a complete and accurate account of the total refuse volumes will be made.)"

R645-301-512.240. IMPOUNDMENTS

There are a total of eight (8) impoundments located at this site. This consists of six sediment ponds (C, E, F, G, H, and I), and two impoundments (Permanent Impoundment and Depression Area). Under the 2008 Modification Plan previous sediment ponds A, B, and D will be eliminated and replaced with new sediment pons G, H and I. Existing sediment ponds E and F will also be enlarged to accommodate the new drainage system. Existing sediment pond C and the Permanent Impoundment and Depression Area will not be altered.

All sediment ponds are sized to contain the runoff from a 10 year-24 hour precipitation event, plus 3 years of sediment storage. A combination of primary and emergency overflows are also provided on each sediment pond, and each is sized to safely convey the runoff from a 25 year-6 hour precipitation event, as required. The Permanent Impoundment and Depression Area are each sized to contain the runoff from a 100 year-6 hour precipitation event. The Permanent

Overflow is also equipped with a primary and emergency overflow, each sized to convey runoff from a 100 year-6 hour precipitation event. The Depression Area is an area used mainly for coal storage adjacent to the Utah Railway embankment. There are no culverts or overflows from this area.

Complete sizing and design details for all impoundments are included in Appendix R, "Wildcat Loadout Sedimentation and Drainage Control Plan". All impoundments are shown on Plates 2 and 15. Impoundment plans and details are shoswn on Plates 3A through 3H.

All sediment ponds are considered temporary and will be removed upon final reclamation. The Permanent Impoundment and Depression Area are sized to contain the 100 year event, and are considered permanent structures.

**********NOTE TO REVIEWS: THE FOLLOWING TEXT IS TO BE REMOVED FROM CHAPTER 5 AND IS REPLACED IN ITS ENTIRETY IN NEW APPENDIX R, "SEDIMENTATION AND DRAINAGE CONTROL PLAN"**********

~~Please note that this section also addresses all, or relevant portions of, the following main sections in Chapter 7:~~

~~R645-301-722, 723, 724, 725, 728, 731, 732, 733, 734, 740, 741, 742, 743, 744, 752, 753, 763 and 764.~~

~~The Sedimentation and Drainage Control Plan has been designed according to OSM regulations and the design criteria and construction certified by a Utah Registered Professional Engineer. No other embankments or other impoundments have been built nor are any proposed except similar sedimentation control structures at the facility.~~

~~There are six sedimentation ponds constructed at the Wildcat Loadout Site. The pond locations are shown on Plate 2 and each pond is detailed on Plates 3 through 7. An additional 2-celled pond called the Permanent Impoundment is also constructed. This impoundment is meant to capture only natural drainage from the canyon above.~~

~~All ponds are constructed with proper embankment slopes, each is equipped with a principal and emergency spillway. All ponds are presently adequate for the design runoff from a 10 year - 24 hour precipitation event (or larger).~~

~~The disturbed area draining to the ponds has been divided into a series of sub-drainages designated A through F. Runoff from each of these sub-drainages is directed to the corresponding pond via~~

surface flow paths (ditches) and culverts as shown on Plate 2. One area of disturbance, in the northwest corner of the permit area, is an old stockpile area and is a large depression. This area is shown on Plates 1 and 2. The area does not drain and does not receive runoff except for direct precipitation and a small amount of undisturbed runoff from the hillside to the northwest as shown on Plate 2; therefore, it is not included in any of the pond sizing calculations.

There are seven small areas on the site which do not drain to the sediment ponds. These areas are all equipped with alternate sediment control consisting of straw bales, berms and/or vegetation. The areas are designated ASCA Areas and are shown on Plate 2. Complete descriptions of each of the areas is provided in this chapter.

All sediment ponds are sized to contain the complete runoff from a 10 year - 24 hour precipitation event. If ponds need to be dewatered, this will be accomplished by a small pump or siphon, in accordance with the discharge permit. The ponds meet a theoretical detention time of at least 24 hours, since they will totally contain runoff from the 10 year - 24 hour event without overflow and any release from the pond is at the discretion of the operator, after a 24 hour settling period. All ponds are covered by a UPDES Discharge Permit.

Maximum sediment levels for each pond is shown on the corresponding Plates 3 through 7. Each pond will be equipped with a sediment marker (as shown). The marker will consist of a steel rod or pipe painted with a red stripe to delineate the maximum sediment accumulation level in each pond.

Certifications of the design and construction inspections are provided in Appendix H.

Ponds will be inspected on a quarterly basis for safety, condition, and operation, and results recorded at the office for inspection.

All ponds are temporary and will be removed in two phases during final reclamation with the exception of the Permanent Impoundment, shown on Plate 2. During Phase I, Ponds B and E will be removed. This will occur during initial reclamation and revegetation of the property. Ponds A, C, D, and F will remain in place until revegetation standards are reached on the reclaimed site. At that time, during Phase II, all ponds will be removed except for the Permanent Impoundment and the pond areas reclaimed.

R-69 forms for each of the sediment ponds have been submitted to

~~the State Engineer, as required. Copies of the forms are included in Appendix H of this plan.~~

~~All ponds have been constructed according to the design criteria under "Construction Specifications for Sedimentation Ponds".~~

~~Construction Specifications for Sedimentation Ponds~~

~~The following design criteria were used in the construction of all sedimentation ponds at the Wildcat Loadout. The certifications found in Appendix H reflect these design criteria.~~

~~All construction of sedimentation ponds will be performed under the direction of a qualified registered professional engineer.~~

~~Dams shall be constructed with primary overflows a minimum of two feet from the top, and emergency overflows at least one foot from the top.~~

~~The areas of pond construction shall be examined for topsoil, and where present in removable quantities, such soil shall be removed separately and stored in an approved topsoil storage location.~~

~~In areas where fill is to be placed, natural ground shall be removed for at least 12" below the base of the structure.~~

~~Native materials will be used where practical. Fill will be placed in lifts not to exceed 15" and compacted prior to placement of next lift. Compaction of all fill materials shall be at least 95%.~~

~~Rip-rap or other protection (belting, culverts, etc.) will be placed at all inlets and outlets to prevent scouring. Rip-rap will consist of substantial (non-slaking) rock material of 6" or greater size.~~

~~Each pond shall be fitted with an inverted inlet to the primary overflow, to prevent the passage of oil into the discharge.~~

~~Slopes of the dams shall not be steeper than 2h:1v, inside and outside, with a total of the inslope and outslope not less than 5:1.~~

~~Tops and external slopes of the dams shall be planted with an approved seed mix to prevent erosion and promote stability. Compaction of the slopes shall be at least 95%.~~

~~Top width of dams shall be not less than (H + 35)/5.~~

~~Design Parameters~~

Precipitation

The precipitation - frequency values for the area were taken from "NOAA, Precipitation - Frequency Atlas of the Western U.S., Volume 6".

Frequency - Duration	Precipitation
10 year - 24 hour	1.85"
25 year - 24 hour	2.15"
100 year - 24 hour	2.75"
100 year - 6 hour	1.91"

Flow

Flows for the property were calculated using the SCS-TR55 Method as described on page 114 of "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner and Haan, 1983. Peak discharge in CSM per inch of runoff was taken from Figure 2.40, page 115 of that same reference.

Time of concentration of storm events was calculated for each sub-drainage using the following formula:

$$t_L \text{ (hrs.)} = \frac{L^{0.8}(S+1)^{0.7}}{1900y^{0.5}} \quad ; \quad t_L = 0.6t_c$$

where: t_c = Time of concentration (hrs.)
t_L = Lag Time (hrs.)

L = Hydraulic Length of Watershed (ft.)
y = Average Land Slope (%)
$S = \frac{1,000}{CN} - 10$

Estimated Return Periods for Short Duration Precipitation in Utah U.S.U., page 53

Velocity

Flow velocities for each sub-drainage were calculated using Manning's Formula:

$$V = \frac{1.49\, R^{2/3} S^{1/2}}{n}$$

where: v = Velocity in feet per second
r = Hydraulic radius in feet
s = slope in feet per foot
n = Manning's n, Table 3.1, page 159, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner & Haan,

1983.

Small Drainage Ditches - 0.025*
Corrugated Metal Pipe - 0.025

*Based on DOGM recommendation.

Areas

All areas were planimetered directly from the Watershed Map, Plates 2 and 15.

Slopes

All slopes were measured directly from the topography on the Watershed Map, Plates 2 and 15.

Runoff

Runoff was calculated using the SCS formula:

$$Q = \frac{(P-0.2S)^2}{P+0.8S}$$

where: Q = Runoff in inches
P = Precipitation in inches
$S = \frac{1,000}{CN} - 10$
CN = Runoff curve number

note: A runoff curve number of 90 was used for all disturbed areas. This is a conservative number based on the SCS determinations for Runoff Curve Numbers for Antecedent Moisture Condition II. A runoff curve number of 65 was used for undisturbed areas. this number is based on the SCS determinations for Runoff Curve Numbers for Antecedent Moisture Condition II, Soil Group B, Range Land in Fair to Good Condition.

The selection of the curve number is also based on field observations and subsequent discussions with DOGM personnel.

The native soil in the area is quite sandy and porous in nature, resulting in a relatively low runoff potential. This was the basis for the selection of SCS Soil Group B.

The runoff numbers were also checked against the chart in Figure 2.26, page 85, "Applied Hydrology

and Sedimentology for Disturbed Areas", Barfield, Warner, and Haan, 1983.

Sediment Yield

The Universal Soil Loss Equation (USLE) was used to estimate sediment yield from disturbed areas. All soil loss from disturbed sub-areas was assumed to be delivered to, and deposited in the respective ponds.

Erosion rate (A) in tons-per-acre-per-year is determined using the USLE as follows.

$$A = (R)(K)(LS)(CP)$$

The variables R, K, LS, and CP are defined as follows.

Variable "R" is the rainfall factor which can be estimated from $R = 27P^{2.2}$, where P is the 2 year, 6 hour precipitation value. P for the Gordon Creek Area is 0.85 inches as shown on Figure 5.4, page 315, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner, and Haan, 1983. Therefore, the estimated value of "R" for this area is 18.88.

Variable "K" is the soil erodibility factor. For disturbed areas, the "K" value was conservatively estimated to be 0.5. This value is representative of compacted disturbed areas such as roads, embankments, and parking areas.

Variable "LS" is the length - slope factor. This figure was determined by applying the slope length and percentage for each sub-drainage area to the chart in Figure 5.15, page 334, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner, and Haan, 1983.

Variable "CP" is the control practice factor, which can be divided into a cover and a practice factor. For purposes of these calculations, no cover or control practice was assumed, and therefore, the "CP" factor was used as the maximum value of 1.

The results of the sediment yield calculations are summarized on Table V-4, Sediment Yield. A unit weight of 100 pounds per cubic foot was used to convert sediment yield to volume capacity requirements. Sediment storage values shown on the Sediment Pond Specification Tables are for a 3-year period.

Pond Volumes

All pond volumes shown in the Sediment Pond Specification Tables are from measurements taken directly from the "As Constructed"

~~drawings of the sediment ponds, Plates 3 through 7 and Plate 18. Areas of the top and bottom of the ponds were planimetered, and depths were measured directly.~~

~~The following tables will summarize the drainage areas, sediment yield, and sediment pond specifications. Methods of calculations are detailed in Design Parameters.~~

~~STAGE-VOLUME DATA~~
~~FOR~~
~~DEPRESSION AREA~~

~~Elevation~~	~~Area ($ft.^2$)~~	~~Volume (ac. ft.)~~	~~Accum. Volume (ac. ft.)~~
~~6172 (Bottom)~~	~~4,500~~	~~-~~	~~-~~
~~6174~~	~~46,000~~	~~1.16~~	~~1.16~~
~~6176 (Top)~~	~~121,000~~	~~3.83~~	~~4.99~~

~~Note: Water would impound to an elevation of 6,178 before actually going over the track area. This would increase the total storage volume by an additional 6.54 acre feet, allowing for an absolute maximum of 11.53 acre feet of storage before discharging. The 6,176 elevation used would not result in damage.~~

TABLE V-2

Drainage Areas/Flow Calculations

Drainage Area	Area (acres)	Length (ft.)	Elev. Diff. (ft.)	Slope (%)	tc (hrs)	Q (cfs)
A	7.85	800	38	4.75	0.14	6.96
B	2.29	600	18	3.27	0.14	2.03
C	18.03	1200	52	4.33	0.21	15.31
D	6.61	400	18	4.50	0.08	6.45
E	7.69	1250	52	4.16	0.22	6.50
F	7.50	1200	38	3.17	0.24	6.26

TABLE V-2A

Post-Mining
Drainage Areas/Flow Calculations

Drainage Area	Area (acres)	Length (ft.)	Elev. Diff. (ft.)	Slope (%)	tc (hrs)	Q (cfs)
A	10.14	800	38	4.75	0.14	14.26
C	30.59	1200	52	4.33	0.21	37.04
D	8.04	1250	52	4.16	0.22	9.42
F	7.50	1200	38	3.17	0.24	8.79

~~TABLE V-3~~

~~Runoff Calculations~~

~~Area/Pond~~	~~A~~	~~B~~	~~C~~	~~D~~	~~E~~	~~F~~
~~Drainage Area (ac.)~~						
~~Precipitation~~	~~7.85~~	~~2.29~~	~~18.03~~	~~6.61~~	~~7.69~~	~~7.50~~
~~10 yr.-24 hr. (in.)~~	~~1.85~~	~~1.85~~	~~1.85~~	~~1.85~~	~~1.85~~	~~1.85~~
~~25 yr.-24 hr. (in.)~~	~~2.15~~	~~2.15~~	~~2.15~~	~~2.15~~	~~2.15~~	~~2.15~~
~~100 yr.-24 hr. (in.)~~	~~2.75~~	~~2.75~~	~~2.75~~	~~2.75~~	~~2.75~~	~~2.75~~
~~Runoff CN~~	~~90~~	~~90~~	~~90~~	~~90~~	~~90~~	~~90~~
~~Runoff to Pond:~~						
~~10 yr.-24 hr. (ac. ft.)~~	~~0.654~~	~~0.191~~	~~1.503~~	~~0.551~~	~~0.641~~	~~0.625~~
~~25 yr.-24 hr. (ac. ft.)~~	~~0.820~~	~~0.239~~	~~1.883~~	~~0.690~~	~~0.803~~	~~0.783~~
~~100 yr.-24 hr. (ac. ft.)~~	~~1.143~~	~~0.333~~	~~2.624~~	~~0.962~~	~~1.119~~	~~1.092~~
~~Peak Flow:~~						
~~10 yr.-24 hr. (cfs)~~	~~6.96~~	~~2.03~~	~~15.31~~	~~6.45~~	~~6.50~~	~~6.26~~
~~25 yr.-24 hr. (cfs)~~	~~8.72~~	~~2.54~~	~~19.29~~	~~8.04~~	~~8.20~~	~~7.90~~

~~TABLE V-3A~~

~~Post-Mining~~
~~Runoff Calculations~~

~~Area/Pond~~	~~A~~	~~C~~	~~D~~	~~F~~
~~Drainage Area (ac.)~~	~~10.14~~	~~30.59~~	~~8.04~~	~~7.50~~
~~10 yr. - 24 hr. (in.)~~	~~1.85~~	~~1.85~~	~~1.85~~	~~1.85~~
~~25 yr. - 24 hr. (in.)~~	~~2.15~~	~~2.15~~	~~2.15~~	~~2.15~~
~~Runoff CN~~	~~90~~	~~90~~	~~90~~	~~90~~
~~Runoff to Pond.~~				
~~10 yr. - 24 hr. (ac. ft.)~~	~~0.845~~	~~2.549~~	~~0.670~~	~~0.625~~
~~25 yr. - 24 hr. (ac. ft.)~~	~~1.059~~	~~3.193~~	~~0.839~~	~~0.783~~
~~Peak Flow.~~				
~~10 yr. - 24 hr. (ac. ft.)~~	~~14.26~~	~~37.04~~	~~9.42~~	~~8.79~~
~~25 yr. - 24 hr. (ac. ft.)~~	~~17.11~~	~~44.45~~	~~11.31~~	~~10.93~~

TABLE V-4

Sediment Yield

Area/Pond	A	B	C	D	E	F
Area (ac.)	7.85	2.29	18.03	6.61	7.69	7.50
Length	800	600	1200	400	1250	1200
Slope (%)	4.75	3.27	4.33	4.50	4.16	3.17
LS Factor	1.30	0.56	1.30	0.85	1.30	0.60
Sed. Yield (tons/ ac/yr.)	12.27	5.29	12.27	8.02	12.27	5.664
Unit Weight (lbs./ ft.^{3})	100	100	100	100	100	100
Sed. Yield (ac. ft./yr.)	0.044	0.006	0.102	0.024	0.043	0.019
Sed. Yield (ac. ft./3 yrs.)	0.132	0.018	0.306	0.072	0.129	0.057

Note: Calculations based on Universal Soil Loss Equation

R = 18.88 inches

K = 0.5

CP = 1

~~TABLE V-4A~~

~~Post-Mining~~
~~Sediment Yield~~

~~Area/Pond~~	~~A~~	~~C~~	~~D~~	~~E~~
~~Area (ac.)~~	~~10.14~~	~~30.59~~	~~8.04~~	~~7.50~~
~~Length (ft.)~~	~~800~~	~~1200~~	~~1250~~	~~1200~~
~~Slope (%)~~	~~4.75~~	~~4.33~~	~~4.16~~	~~3.17~~
~~LS Factor~~	~~1.30~~	~~1.30~~	~~1.20~~	~~0.60~~
~~Sed. Yield (tons/ac./yr.)~~	~~12.27~~	~~12.27~~	~~11.33~~	~~5.664~~
~~Unit Wt. (lbs/ft.^{3})~~	~~100~~	~~100~~	~~100~~	~~100~~
~~Sed. Yield (ac. ft./yr.)~~	~~0.057~~	~~0.172~~	~~0.042~~	~~0.019~~
~~Sed. Yield (ac. ft./3 yrs.)~~	~~0.171~~	~~0.516~~	~~0.126~~	~~0.057~~

~~Note: Calculations based on Universal Soil Loss Equation~~

~~R = 18.88 inches~~

~~K = 0.5~~

~~CP = 1~~

TABLE V-5

Direct Precipitation to Ponds

Pond	A	B	C	D	E	F
Precipitation (in.):						
10 yr.-24 hr.	1.85	1.85	1.85	1.85	1.85	1.85
25 yr.-24 hr.	2.15	2.15	2.15	2.15	2.15	2.15
100 yr.-24 hr.	2.75	2.75	2.75	2.75	2.75	2.75
Surface Area (ac.)	0.66	0.13	0.86	0.29	0.17	0.18
Precipitation to Ponds (ac. ft.):						
10 yr.-24 hr.	0.055	0.011	0.072	0.024	0.031	0.015
25 yr.-24 hr.	0.069	0.014	0.090	0.030	0.039	0.019
100 yr.-24 hr.	0.096	0.019	0.125	0.042	0.055	0.026

~~TABLE V-5A~~

~~Post-Mining~~
~~Direct Precipitation to Ponds~~

~~Pond~~	~~A~~	~~C~~	~~D~~	~~F~~
~~Precipitation (in.):~~				
~~10 yr. - 24 hr.~~	~~1.85~~	~~1.85~~	~~1.85~~	~~1.85~~
~~25 yr. - 24 hr.~~	~~2.15~~	~~2.15~~	~~2.15~~	~~2.15~~
~~Surface Area (ac.)~~	~~0.66~~	~~0.86~~	~~0.29~~	~~0.18~~
~~Precipitation to Ponds (ac. ft.):~~				
~~10 yr. - 24 hr.~~	~~0.055~~	~~0.072~~	~~0.024~~	~~0.015~~
~~25 yr. - 24 hr.~~	~~0.069~~	~~0.090~~	~~0.030~~	~~0.019~~

TABLE V-6

Pond Volume Summary
(10 year - 24 hour event)

Pond	A	B	C	D	E	F
Runoff (ac. ft.)	0.654	0.191	1.503	0.551	0.641	0.625
Direct Precipitation	0.055	0.011	0.072	0.024	0.014	0.015
3 yr. Sed. Storage (ac. ft.)	0.132	0.018	0.306	0.072	0.129	0.057
Required Pond Vol. (ac. ft.)	0.841	0.220	1.881	0.647	0.784	0.697
Actual Pond Vol. (ac. ft.)	2.410	0.310	4.430	0.880	0.849	0.700
Excess Capacity (ac. ft.)	1.569	0.090	2.549	0.233	0.065	0.003

~~TABLE V-6A~~

~~Post-Mining~~
~~Pond Volume Summary~~
~~(10 year - 24 hour event)~~

~~Pond~~	~~A~~	~~C~~	~~D~~	~~F~~
~~Runoff (ac. ft.)~~	~~0.845~~	~~2.549~~	~~0.670~~	~~0.625~~
~~Direct Precip. (ac. ft.)~~	~~0.055~~	~~0.072~~	~~0.024~~	~~0.015~~
~~3 yr. Sed. Storage (ac. ft.)~~	~~0.171~~	~~0.516~~	~~0.126~~	~~0.057~~
~~Req'd Pond Volume (ac. ft.)~~	~~1.071~~	~~3.137~~	~~0.820~~	~~0.697~~
~~Actual Pond Volume (ac. ft.)~~	~~2.410~~	~~4.430~~	~~0.880~~	~~0.700~~
~~Excess Capacity (ac. ft.)~~	~~1.339~~	~~1.293~~	~~0.060~~	~~0.003~~

~~TABLE V-7~~

~~Pond Specification Summary~~
~~(10 year - 24 hour event)~~

~~Pond~~	~~A~~	~~B~~	~~C~~	~~D~~	~~E~~	~~F~~
~~Drainage Area (ac.)~~	~~7.85~~	~~2.29~~	~~18.03~~	~~6.61~~	~~7.69~~	~~7.50~~
~~Required Volume (ac. ft.)~~	~~0.841~~	~~0.220~~	~~1.881~~	~~0.647~~	~~0.784~~	~~0.697~~
~~Existing Volume (ac. ft.)~~	~~2.410~~	~~0.310~~	~~4.430~~	~~0.880~~	~~0.849~~	~~0.700~~
~~Excess Volume (ac. ft.)~~	~~1.569~~	~~0.090~~	~~2.549~~	~~0.233~~	~~0.065~~	~~0.003~~
~~*Sed. Cleanout Level (ft.)~~	~~2.50~~	~~0.75~~	~~3.50~~	~~1.25~~	~~0.50~~	~~0.50~~
~~Embankment Slopes (%):~~						
~~Inside~~	~~3:1~~	~~5:1~~	~~3:1~~	~~3:1~~	~~3:1~~	~~2:1~~
~~Outside~~	~~2:1~~	~~2:1~~	~~2:1~~	~~2:1~~	~~2:1~~	~~3:1~~
~~Overflow Structures:~~						
~~Principal~~	~~18"cmp~~	~~12"cmp~~	~~18"cmp~~	~~18"cmp~~	~~18"cmp~~	~~12" cmp~~
~~Emergency~~	~~1'x 4'~~	~~1'x 4'~~	~~18"cmp~~	~~18"cmp~~	~~1'x 4'~~	~~1'x 4'~~

~~* Sediment Cleanout Levels are based on 60% of sediment storage for 3 years plus excess pond volume~~

~~NOTE: In the event any of the ponds or the impoundment need to be decanted, Andalex will provide pumps.~~

~~TABLE V-7A~~

~~Permanent Impoundment~~

~~*Drainage Area~~	~~86.32 acres~~
~~10 year - 24 hour event~~	~~1.85 inches~~
~~100 year - 6 hour event~~	~~1.91 inches~~
~~Runoff Curve Number~~	~~65~~
~~Required Pond Volume (10/24)~~	~~0.70 ac. ft.~~
~~Required Pond Volume (100/6)~~	~~0.81 ac. ft.~~
~~** Upper Cell Volume~~	~~0.43 ac. ft.~~
~~** Lower Cell Volume~~	~~0.53 ac. ft.~~
~~Total Storage Volume~~	~~0.96 ac. ft.~~

~~NOTE: Ponds are adequate for the 10 year - 24 hour event and the 100 year - 6 hour event.~~

~~* Planimetered from Plate 15~~
~~** Planimetered from Plate 18~~

TABLE V-7B

Permanent Impoundment
Overflow Structures

	Upper Cell		
Structure	Primary 18" CMP	Emergency 18" CMP	Lower Cell Emergency Overflow
Drainage Area	86.32	86.32	86.32
10 yr.-24 hr. event (in.)	1.85	---	1.85
100 yr.-6 hr. event (in.)	---	1.91	1.91
Time of Conc. (hrs.)	0.50	0.50	0.50
Runoff Curve Number	65	65	65
Structure Slope (%)	5.00	5.00	4.00
Peak Flow (10/24)	6.67	---	6.67
Peak Flow (100/6)	---	7.70	7.70
Min. Structure Area (ft^2)	1.77	1.77	4.50
Req'd Area (10/24)	0.80	---	1.74
Req'd Area (100/6)	---	0.92	1.92
Velocity (fps)	8.34	8.37	4.02
Rip-Rap Req'd (Y/N)	Y	Y	N
* Rip-Rap D_{50}	Belting	Belting	6"

* Rip-Rap D_{50} based on Figure V-4.

~~Depression Area:~~

~~This area is located below the 2-celled Permanent Impoundment, between the Permanent Impoundment and the railroad tracks. The area receives a very small amount of water from direct precipitation, and would otherwise receive larger amounts of water only through overflow or failure of the Permanent Impoundment. Calculations show the Depression Area to have a capacity of 4.99 acre feet at an elevation 2' below the tracks - this is 616% of the capacity of the Permanent Impoundment requirements for a 100 year - 6 hour storm event. The Depression Area, however, does not have an overflow, therefore, the following monitoring and de-watering plan is proposed in the unlikely event of significant water accumulation:~~

~~(1) Monitoring - A steel post will be set at the low point of the depression area. This post will be marked at an elevation of 2' above ground level. This elevation will mark the point at which the area will be dewatered.~~

~~(2) Dewatering - If water should accumulate to the mark on the monitoring post, the area will be dewatered using the pump system approved for decanting the sediment ponds on the property.~~

~~Diversion Structures~~

~~Flow within the disturbed area is diverted to the ponds by the use of ditches and culverts. These are temporary structures and will be removed on final reclamation of the site. Undisturbed drainage runoff is diverted around the site by existing channels as shown on Plate 2. These existing channels are permanent and will not be disturbed nor reclaimed during the life of this facility. Since Andalex does not intend to re-establish the drainage through the facility and under the railroad tracks upon final reclamation, these channels will remain after final reclamation.~~

~~Undisturbed Diversions~~

~~UD-1 - Undisturbed runoff from the west of the property is captured by a pre-existing diversion and conveyed to the south and east into the Garley Canyon Drainage. This diversion is shown on Plate 2 as UD-1. The natural drainage into which it drains is designated ND-2. This is a natural drainage and will not be maintained, disturbed, or reclaimed in connection with this operation. A typical section of UD-1 is shown in Figure V-1. This diversion was installed by a previous operator and is meant to replace the original channel through the area, which was rendered useless by the height of the Utah Railway grade. UD-1 intercepts undisturbed runoff from approximately 10.29 acres. This will become a permanent diversion, and as shown on Plate 15 and on Table V-12, will be capable of carrying runoff from a 100 year-6 hour event from this area. Andalex Resources, Inc. will maintain this diversion at the minimum cross-sectional area shown on Figure V-1.~~

~~It was previously proposed to extend UD-1 some 650 feet up the canyon to intercept the majority of the drainage, but during construction, it was determined not feasible due to topography, slope requirements and environmental destruction. The diversion has been pulled back to its original location, and the construction disturbance is being reclaimed.~~

~~Upper Diversion - The farthest reach of the previous UD-1 extension intercepted a small natural drainage coming off the rim of the small canyon. To re-establish the drainage pattern, a berm will be constructed as recommended by the Division. The berm will be 4 feet high with a top width of 2 feet, 2:1 side slopes, and will utilize existing available riprap material on the upstream face. In addition, Andalex will commit to the use of additional erosion control measures approved by the Division if erosion becomes apparent on the upstream face of the berm. Details of the berm design are shown on Figure IV-1A. Upon completion of the berm, any areas disturbed by the construction~~

~~will be regraded and seeded according to the approved plan.~~

~~Lower Diversion - The mid-section of the previous UD-1 extension also blocked a natural drainage ditch. To re-establish the natural drainage pattern, the channel will be reconstructed through the blocked drainage ditch, as recommended by the Division. The channel will be 2 feet deep, 2 feet wide and will have side slopes of 2:1. Details of this channel design are shown on Figure IV-1B. Upon completion of the channel construction, any disturbance will be regraded, and the area will be reseeded according to the approved plan in the MRP.~~

~~Figure V-1~~
~~Undisturbed Diversion UD-1~~

~~Figure V-1A~~
~~Berm Details for Upper Diversion~~

~~Figure V-1B~~
~~Channel Details for Lower Diversion~~

Figure V-1C
Disturbed Flow Ditch
Typical Section

It is proposed to leave UD-1 as a permanent diversion for the following reasons.

1. The diversion has been in place for more than five years without any sign of failure or overflow;

2. The diversion was installed by others and is necessitated by the height of the Utah Railway grade to the east;

3. The original drainage, if restored, would drain into a large depression carved out for previous coal storage;

4. To restore the original channel would require a massive amount of non-available fill material, the installation of a large culvert beneath the Utah Railway, and a restored channel through the middle of the reclaimed loadout area;

5. The proposed, post-mining diversion is adequately sized to convey the runoff from a 100 year - 6 hour and even a 100 year - 24 hour precipitation event.

Permanent Impoundment - The permanent impoundment shown on Plate 2 is a 2-celled structure that catches most of the main canyon drainage from the west. The upper cell is a vegetated basin constructed by a previous owner. Upon surveying the upper cell, it was determined to be inadequate to contain runoff from a 100 year - 6 hour event for the area; therefore, a second, lower cell was constructed in the fall of 1991. The structures were resurveyed after completion, and now have adequate capacity (0.96 acre feet) to fully contain the runoff from a 100 year - 6 hour event (0.81 acre feet).

The upper cell is fitted with two 18" cmp overflows, one for primary overflow and one for emergency overflow. These culverts pass beneath the road between the cells and discharge into the lower cell via erosion - protected channels. The lower cell is equipped with an adequately sized open-notch overflow, protected by rip-rap. This overflow is for emergency purposes only, and will be used only for discharge of runoff beyond the design event (100 year - 6 hour). Details of the "As-Constructed" Permanent Impoundment are shown on Plate 18. Volume calculations and requirements are summarized on Tables V-7A and V-7B.

Upon final reclamation of the area, the two 18" cmp culverts between cells will be replaced by an open-notch overflow of the same size and design of that existing in the lower cell. The area will be reseeded according to the approved methodology and specifications in the MRP. The 2-celled pond will then be left

inplace as a permanent feature and allowed to go through natural succession. The upper cell of the impoundment has been inplace since approximately 1971, and has never overflowed or breached since that time. The lower cell will simply add to that level of protection. Leaving the impoundment inplace will provide for wildlife enhancement as well as runoff protection, through the establishment of a permanent waterhole to capture runoff.

The permanent impoundment will meet the requirements of R645-301-552.200 to allow authorization by the Division, based on the following:

1. The quality of the water will be suitable for wildlife watering, since it will contain only natural runoff;

2. The level of water will vary directly with runoff events, evaporation, and usage;

3. The impoundment will be in an area of controlled public access, however, the area will not be restricted to wildlife use;

4. No diminution of water quality or quantity is expected from this impoundment - it will be strictly runoff water, which has been captured in this impoundment for many years prior to the filing of this permit;

5. The impoundment does not meet the criteria or size of MSHA 30 CFR 77.216 (a);

6. The size of the impoundment is adequate for wildlife watering;

7. The impoundment has been, and will continue to be, suitable for the post-mining land use, which is wildlife watering;

8. Perimeter slopes are stable and do not exceed 2v:1h. Slopes are vegetated, as is the inlet area for erosion protection;

9. The impoundment is mostly incised, and does not have outlet structures, however, no discharge is expected since the pond is well oversized for a 100 year - 6 hour event (See Table V-7A).

10. The impoundment shall be maintained as necessary during the mining operation;

11. The impoundment design and construction is certified by

a registered, professional engineer.

ND-1 - Undisturbed runoff from the north and east is diverted through an existing drainage south of the main Gordon Creek Road. This is also a pre-existing drainage, however, this drainage is considered "natural", having been in existance for more than 20 years. The drainage shows signs of active erosion, typical of other natural drainages in this area; however, the source of the erosive flows is completely out of the area disturbed by the Wildcat Loadout. The drainage is ephemeral and flows southeast into the Garley Canyon Drainage (which shows similar signs of erosion from natural forces). This drainage is shown on Plate 2 as ND-2 (Natural Drainage 2). There are no plans to disturb, maintain, or reclaim these drainages in connection with this operation. The drainage ND-1 does pass through a culvert beneath the haul road. This culvert will be maintained and removed during reclamation, and the culvert area restored to natural conditions.

Upon final reclamation (Phase II) culverts C-33 and C-34 will be removed, and the drainage channels restored. Since both culverts are on undisturbed or natural drainage channels, it is proposed to establish a compatible channel dimension at the time of reclamation, since the channels will likely change in the interim. At the initiation of Phase I Reclamation, a typical cross section of the undisturbed diversion (UD-2) and natural channel (ND-1) will be established for 100' above and below the culverts. The restored channels will then be constructed (during Phase II) using the average dimension and area of the cross-sections as a minimum. Peak flows and velocities for the reconstructed drainages shall be those from Table IV-9A for culverts C-33 and C-34. The velocities indicate the expected flows to be marginally erosive; however, rip-rap protection will be provided through the area of reconstruction as described on Table V-14.

UD-2 - Drainage from the Beaver Creek property to the west is collected in a ditch on their property, conveyed to the north and then west beneath their access road and the railroad. This drainage then goes through access road culvert C-33 and into the natural drainage ND-1, as shown on Plate 2. This drainage is from areas outside the control of Andalex, and is therefore considered undisturbed; however, Andalex will maintain culvert C-33 to ensure proper operation and protection of its access road. Beaver Creek has reconstructed the ditch and culverts on its property, and is expected to be responsible for maintenance of those structures.

Undisturbed Diversion UD-2 will convey drainage from a portion of Small Area Exemption 1 as shown on Plate 2. This drainage is

also from a portion of the Beaver Creek property which is unused and to which Beaver Creek has granted Andalex the right of use (see letter of agreement in Appendix B). This area drains approximately 2.30 acres through three culverts and also empties into access road culvert C-33 and to ND-1. Andalex has included this diversion within its permit boundary and agrees to maintain the culverts C-30, C-31, C-32 (and C-33), along with the diversion to provide for design flows as shown on Tables V-9A and V-12. Erosive protection will be provided for culvert C-33 as per specifications in Table V-14. Unless the B.L.M. and Utah Railway prefer a different scenario, the diversion will be left in place upon final reclamation.

The diversion will be maintained to the minimum cross-sectional area shown on Table V-12, however, shape and configuration may vary due to maintenance, regrading, etc.

UD-3 through UD-7 - The undisturbed diversions UD-3 through UD-7 are shown on Plate 2. These "diversions" are primarily natural drainage areas into which the various sediment ponds would discharge. The diversions are out of the area of operation and disturbance, however, since they may convey drainage from the site, they are considered diversions to the permit boundary.

There are no plans to disturb these diversions, however, Andalex will maintain the diversions to the extent necessary to assure they have required minimum flow areas and to prevent erosion. The diversions will be restored if necessary during final reclamation, when the sediment ponds are removed. The diversions may vary in size, depth, and configuration, however, they will be maintained to the minimum cross-sectional areas shown on Table V-12.

Diversions UD-3 and UD-4 have potentially erosive velocities as shown on Table V-12, therefore, these diversions will be fitted with rip-rap erosion protection according to the specifications on Table V-14.

Rip-rap size is based on velocities in Table V-12 and the rip-rap chart in Figure V-4. See Figure V-2A for typical section.

UD-8 - Undisturbed diversion UD-8 as shown on Plate 2 is a small diversion to carry natural runoff from the hillside to the northwest into the depression area. This diversion will be maintained to the minimum cross-sectional area shown on Table V-12. The depression area does not drain, however, it is more than adequate in size to contain runoff from this diversion and drainage area.

~~Culverts~~

~~There are 20 culverts located on the Wildcat Loadout Facility for drainage control. In addition, each pond uses culverts for principal spillways and two for emergency spillways. All culverts are shown on Plate 2, each is listed by number designation and size. The culverts, along with flow characteristics and sizing requirements, are summarized on the following tables, V-8 and V-9 Culvert Specifications. All culverts within a given drainage area are sized in accordance with the maximum peak flow calculated for that area. In addition, culverts noted for pond outlets are sized for peak flows from the respective drainage areas.~~

~~Culvert flow capabilities are based on the "Culvert Nomograph", Figure V-2.~~

~~Erosion protection requirements are discussed on Tables V-8 and V-9 and in this section under "Erosion Protection".~~

TABLE V-8

Drainage Culvert Specifications

Culvert	Size (in.)	Drainage Area	Design Flow (cfs)	[1]Capacity Flow (cfs)	[2]Velocity (fps)	[3]Erosion Protec. (y/n)
C1	18	E	4.66	9.00	3.12	N
C2	24	E	4.66	18.00	1.76	N
C3	24	C	5.64	18.00	1.80	[3]Y
C4	24	C	5.64	18.00	3.59	N
C4A	24	C	5.64	18.00	3.59	N
C4B	24	C	11.27	18.00	3.59	N
C5	12	C	2.82	3.20	3.59	N
C5A	12	C	2.82	3.20	3.59	N
C6	15	C	5.64	5.50	4.59	[3]Y(emp)
C7	15	A	2.75	5.50	2.36	[3]Y(rock)
C7A	12	A	2.75	3.20	3.50	N
C8	12	A	2.75	3.20	3.50	N
C9A	15	A	4.43	5.50	3.80	N(belt)
C10	12	B	3.22	3.20	4.10	N
C11	18	C	7.51	9.00	4.24	N
C12	18	E	4.66	9.00	2.63	N
C24	15	E	4.66	5.50	3.79	N
C25	15	E	4.66	5.50	3.79	N
C26	12	E	2.33	3.20	2.97	N
C27	12	A	2.75	3.20	3.50	N

[1]Based on a minimum of H/D = 1.5 (See Figure V-2)
[2]Velocity based on Q = AV
Culverts on 3% Slope (minimum)
[3]Rip rap protection provided or required
[5]Erosion protection may prove to be required at any or all locations. Outfalls will be checked for erosion and protection provided as needed. A "Y" on Erosion Protection means protection will be provided "as necessary", to be determined by field inspections.

~~TABLE V-8 (con't)~~

~~Additional Notes~~

~~[5]Flow in culvert C 4b is controlled by inlet conditions. The culvert is 400 feet long, and will be fitted with a trash rack at the inlet. The rack will consist of a steel frame 30" x 30" with 3/4" rebar (or steel rods) welded vertically on 4" centers.~~

~~TABLE V-9~~

~~Pond Culvert Specifications~~

Culvert	Size (in.)	Pond	Design Flow (cfs)	[1]Capacity Flow (cfs)	[2]Velocity (fps)	[3]Erosion Protection (y/n)
C13	18	A	6.96	11.00	3.94	Y
C14	12	B	2.93	4.00	2.59	Y
C15	18	C	15.31	11.33	8.66	Y
C16	18	C	19.29	22.00	10.92	Y
C17	18	D	6.45	11.00	3.65	Y
C18	18	D	8.04	22.00	4.55	Y
C19	18	E	6.50	11.00	3.68	Y
C20	18	F	6.26	[4]6.30	7.47	Y

[1]Based on headwater depth H/D = 2.0 (See Figure IV-2)

[2]Based on V = Q/A
Culverts on 3% Slope (minimum)

[3]Y on Erosion Protection means protection will be provided "as necessary", to be determined by field inspections.

[4]Based on H/D=4.0; adequate headwater depth available.

TABLE V-9A

Access Road and UD-2 Culverts

Culvert	Size (in.)	Drainage	Design Flow (cfs)	Capacity**** Flow (cfs)	***Velocity (fps)	Erosion Prot. (y/n)
C-30	15	UD-2	0.67	5.51	3.49	N
C-31	12	UD-2	0.67	3.20	0.85	N
C-32	24	UD-2	0.67	18.00	0.21	N
C-32A	12	UD-2	0.67	3.20	0.85	N
* C-33	24	UD-2	8.76	18.00	6.95	Y
**C-34	36	ND-1	32.39	48.50	4.58	N

* Access Road Culvert - Includes drainage from UD-2 and 44.5 acres from Beaver Creek Property.

** Access (Haul) Road Culvert - Runoff area planimetered from Plate 15.

*** Based on V = Q/A

**** 1.5 foot minimum headwall

NOTE: Y on Erosion Protection means protection will be provided "as necessary", to be determined by field inspections.

~~Figure V-2~~
~~Culvert Nomograph~~

~~Figure V-2A~~
~~Sediment Pond Outlet Protection~~

~~Figure V-2B~~
~~Typical Section of Emergency Spillways~~

~~Disturbed Flow Ditches~~

~~Disturbed area runoff is diverted to the ponds through a series of ditches and culverts as shown on Plate 2. The disturbed flow ditches are designated as D-1, D-2, ..., and the culverts are noted as C1, C2, ... The disturbed flow ditches will vary in depth and configuration, however, all ditches will be maintained at the minimum cross-sectional area shown on Table V-13, "Disturbed Flow Ditch Summary". A typical section of the Disturbed Flow Ditches is shown in Figure V-1C. As shown on Table V-13, most velocities are expected to be less than 5 fps, with the majority less than 4 fps. These velocities are considered moderately erosive, and as a result, erosion protection may prove to be necessary. Andalex will continue to observe potential erosion locations throughout the life of the loadout. Where erosion has become evident as demonstrated by observation, energy dissipators have been installed and erosion protection has been installed to reduce flow velocities, as discussed under Section 5 "Erosion Control" below.~~

~~To date energy dissipators have consisted of straw bales, spaced adequately to help control the erosion. More permanent energy dissipators are not proposed for the disturbed area ditches, due to the frequency of cleaning and regrading ditches.~~

~~Disturbed area diversions are designed, constructed, and maintained to prevent additional contributions of suspended solids to streamflow and to runoff outside the permit area. Appropriate gradients and energy dissipators as required, will be used to control sediment contributions. All diversions will be maintained with a minimum freeboard of at least 0.3 feet. Excess or cleaned material shall be disposed of in an approved refuse disposal area with material cleaned from the sediment ponds.~~

~~It should be noted that the junction of drainages to Ponds A, B, and C, shown on Plate 2, represent the "worst case" scenario for drainages to these points from this area. This is a coal pad area, and is in a constant state of change - as a result, drainage patterns within the pad are subject to frequent change. Temporary ditches, such as the one recently placed in the Pond B drainage, may be placed to direct runoff over the short-term, however, such ditches are only temporary and are likely to be changed or eliminated with changes in the pile.~~

~~One ditch, designated D-17, is located adjacent to the waste coal area, and will carry the runoff from this area to Pond F. Under the new regulations, this ditch must be sized to carry runoff from a 100 year - 6 hour event, therefore, the calculations on Table V-13 reflect the 100 year - 6 hour design for this ditch only. The calculated runoff is based on a 100 year - 6 year~~

event of 1.91", a CN of 90 and an area of 1.47 acres for the refuse/waste coal area.

All ditches are shown on Plate 2.

Erosion Control

The majority of calculated velocities of culverts and ditches fall between 3 and 5 fps. Although it has been common practice to consider flows less than 5 fps as non-erosive, the Division has recommended that 3 fps be used on this site as the limit for non-erosive flow. Andalex will therefore commit to the following.

Constant observation of all ditches and in particular those which may have an erosive flow will be made periodically as well as following precipitation events to determine whether excessive erosion has occurred. Those ditches which may have an erosive flow according to the calculations are noted below.

Ditch D-3	Near Pond D Inlet
Ditch D-7	Near Pond C Inlet
Ditch D-9	Mid-Point
Ditch D-11	Upper Portion of Ditch
Ditch D-13	Mid-Point
Ditch D-14	Mid-Point
Ditch D-17	Upper Portion of Ditch

Observations of these ditches were made periodically and following precipitation events. It was determined that erosion was going to be a constant problem in many of these ditches due to the nature of the soil material at Wildcat. Therefore, where erosion was consistently observed, the ditches were lined either with conveyor belt or half-round culvert. The following specific actions were taken after these observations were made. Diversion D-3 has shown erosion at the sedimentation pond inlet and therefore 24" half round culvert has been installed. Diversion D-7 has also shown erosion at the Sediment Pond C inlet and therefore 24" half round culvert has been installed. Erosion has not been noted in Diversion D-9, in fact, Diversion D-9 has to be regularly cleaned out. Similarly Diversion D-11 must be periodically cleaned, erosion has not been observed. Erosion has also not been observed in Diversion D-13 except at the inlet to Sediment Pond A where the inlet culverts now spill onto conveyor belting. Diversion D-14 is also periodically cleaned, erosion has not been noted. The same note may be made on D-14 regarding the Sediment Pond A inlet. Diversion D-17 is periodically cleaned, the erosion which was noted is at the inlet to Sediment Pond F where 24" half round culvert has been installed. Plate 2 reflects all of these installations. It should also be noted

~~that in addition to those ditches mentioned above, all pond inlets are equipped with erosion control. Also, Diversion D-1 has been lined entirely with 24" half round culvert. Diversion UD-1 near SAE 4 is equipped with 24" half round on one particularly steep slope. None of the other diversions have erosion problems but are cleaned periodically.~~

~~In addition, erosion protection is already in place at various culvert outlets and on disturbed ditch D-1 (see Plate 2). Rip-rap protection and specifications are summarized in Table V-14.~~

~~Erosion protection on diversions may consist of the following:~~

~~1. Rip-rap~~
~~a. Installed per Table V-14.~~

~~2. Half-round culverts or full culverts.~~
~~(See Plate 2)~~

~~3. Velocity Controls~~
~~a. Straw Bales~~

~~4. Revegetation~~

~~5. Other proven or approved structures.~~
~~a. Upon consultation with the Division.~~

~~Erosion protection is also provided at all pond emergency spillways as shown in Figure V-2B.~~

~~Inlets on Pond F (Plate 7) are equipped with conveyor belting below the half round culverts to aid in erosion protection.~~

~~The main form of erosion control used on the property in addition to half round culvert is revegetation. All topsoil piles, sediment pond embankments, and other disturbed areas no longer needed for the operation have been reseeded using an interim seed mix for this site.~~

~~Effects of Operation on Surface Water~~

~~Since this is a surface processing and loadout operation, no mining or extraction will be done at this site; therefore, the only effects from this operation on surface water would be from disturbed area runoff. The control plans described earlier in this chapter are designed to direct and control runoff and to prevent erosion as required by regulation. Adequate maintenance of these facilities will ensure proper operation and minimize effects on surface water.~~

Since the area on which the loadout facility is located was previously disturbed by another lessee, the implementation of approved drainage controls will likely have a positive effect on the quality of surface water within and below the permit area.

Mitigation and Control Plans

The permit area and adjacent area contain no renewable groundwater or surface water resources, therefore, water right protection or mitigation measures are not anticipated to be required at this operation. The sediment control structures are adequate to prevent impacts to the hydrologic regime. These structures will be maintained to function as designed for the life of the operation. Failure or malfunction of any of the control structures will be corrected as soon as practicable after discovery and any adverse impacts (erosion, structure damage, etc.) will be repaired as soon as practicable thereafter.

Water Monitoring Plans (Also R645-301-722.300, 723, 724, 731.200)

Four surface water monitoring stations will be established as shown on Plate 15. Two of the stations will be located in undisturbed drainage above the site and two stations will be in the same drainages below the site. This configuration will show any affects of the operation on the drainage of the area.

Since this is a new permit and no baseline data has been gathered, the stations will be monitored according to the Baseline Criteria (parameters and frequency) listed in Table V-10, "Surface Water Baseline and Operational Water Quality Parameter List", for the first two years. After that time, the stations will be monitored according to the parameter and frequency requirements of the operational portion of Table V-10. Reclamation monitoring will also follow the requirements of the Postmining portion of Table V-11.

Water monitoring stations will be designated as WCW-1 through WCW-4 for surface monitoring points. In addition, each pond discharge will be monitored according to N.P.D.E.S. requirements. These station numbers will be designated WCW-A through WCW-F for Ponds A through F respectively (see Plates 2 and 15).

Monitoring results will be submitted to the Division quarterly, within sixty days following the end of the reporting quarter.

Samples will be collected during or shortly after precipitation events to establish baseline parameters.

Baseline monitoring will consist of eight samples analyzed for

~~the baseline chemical parameters on Table IV-10 (four per annum, collected quarterly during precipitation events). A rain gauge will also be installed at the site, and a log of precipitation events will be maintained on site.~~

~~It should be noted that Andalex and its designated laboratory will follow the "Standard Methods for the Examination of Water and Wastewater" for all of the above water samples.~~

~~TABLE V-10~~

~~Surface Water Baseline and Operational~~
~~Water Quality Parameter List~~

~~Field Measurements:~~

- ~~* - Water Levels or Flow~~
- ~~* - pH~~
- ~~* - Specific Conductivity (umhos/cm)~~
- ~~* - Temperature (C^{o})~~

~~Laboratory Measurements: (mg/1) IONS AND METALS ANALYSES ARE DISSOLVED, EXCEPT AS NOTED~~

- ~~* - Total Settleable Solids~~
- ~~* - Total Suspended Solids~~
- ~~* - Total Dissolved Solids~~
- ~~* - Total Hardness (as $CaCO_3$)~~
- ~~* - Acidity~~
- ~~- Aluminum (A1)~~
- ~~- Arsenic (As)~~
- ~~- Barium (Ba)~~
- ~~- Boron (B)~~
- ~~* - Carbonate (CO_3^{-2})~~
- ~~* - Bicarbonate (HCO_3^{-})~~
- ~~- Cadmium (Cd)~~
- ~~* - Calcium (Ca)~~
- ~~* - Chloride (Cl^{-})~~
- ~~- Chromium (Cr)~~
- ~~- Copper (Cu)~~
- ~~- Fluoride (F^{-})~~
- ~~* - Iron (FE) (TOTAL)~~
- ~~* - Iron (Fe) (DISSOLVED)~~
- ~~- Lead (Pb)~~
- ~~* - Magnesium (Mg)~~
- ~~* - Manganese (Mn) (Total)~~
- ~~* - MANGANESE (MN) (Dissolved)~~
- ~~- Mercury (Hg)~~
- ~~- Molybdenum (Mo)~~
- ~~- Nickel (Ni)~~
- ~~- Nitrogen: Ammonia (NH_3)~~
- ~~- Nitrate (NO_3^{-})~~
- ~~- Nitrite (NO_2)~~
- ~~* - Potassium (K)~~
- ~~- Phosphate (PO_4^{-3})~~
- ~~- Selenium (Se)~~
- ~~* - Sodium (Na)~~
- ~~* - Sulfate (SO_4^{-2})~~
- ~~- Sulfide (S^{-})~~

~~- Zinc (Zn)~~
~~* - Oil and Grease~~
~~* - Cation-Anion Balance~~

~~-Baseline *Operational~~

~~TABLE V-11~~

~~Surface Water Sampling~~

	Baseline	Operational	Postmining
Type of Sampling Site	Surface Water Bodies	Surface Water Bodies	Surface Water Bodies
Field Measurements (See Table V-10)	Performed during water level/flow measurements	Performed during water level/flow measurements	Performed during water level/flow measurements
Sample Frequency	Quarterly for lakes, reservoirs, and impoundments (water level and quality), monthly flow measurements and quarterly water quality measurements (one sample at low flow and high flow each) for perennial streams. Monthly flow and water quality measurements during period of flow for intermittent streams. Sampling for ephemeral streams determined at predesign conference.	Quarterly for lakes, reservoirs, and impoundments (water level and quality), monthly flow measurements and quarterly water quality measurements (one sample at low flow and high flow each) for perennial streams. Monthly flow and water quality measurements during period of flow for intermittent streams. Sampling for ephemeral streams determined at predesign conference.	Two per annum for perennial streams (high & low flow), two per annum during snowmelt and rainfall for intermittent streams.

~~TABLE V-11 (con't)~~

~~Surface Water Sampling~~

	Baseline	Operational	Postmining
~~Sampling Duration~~	~~Two years (one complete year of data before submission of PAP.~~	~~Yearly until two years after surface reclamation activities have ceased.~~	~~Until termination of bonding.~~
~~Type of Data Collected & Reported~~	~~Flow and/or water levels and water quality.~~	~~Flow and/or water levels and water quality.~~	~~Flow and/or water levels and water quality per operational parameters.~~
~~Comments~~	~~All field measurements should be performed concurrently with water level/flow measurements.~~	~~All field measurements should be performed concurrently with water level/flow measurements.~~	~~All field measurements should be performed concurrently with water level/flow measurements.~~
~~Comments~~		~~For every fifth year preceding re-permitting, one sample at low flow and and high flow each should be taken for base-line water quality parameters.~~	

TABLE V-12

Undisturbed Diversion Summary

Structure	UD-1 (Overall)	**UD-1 (Near Pond F)	UD-2	*UD-3	*UD-4
Drainage Area (ac.)	10.29	10.29	2.30	6.61	18.03
10 yr.-24 hr. event (in.)	1.85	1.85	1.85	1.85	1.85
25 yr.-24 hr. event (in.)	2.15	2.15	2.15	2.15	2.15
100 yr.-24 hr. event (in.)	2.75	2.75	2.75	2.75	2.75
Time of Conc. (hrs.)	0.10	0.10	0.13	-	-
Curve Number	65	65	65	-	-
Manning's Number	.025	.032	.025	.025	.025
Ditch Slope (%)	4.00	7.00	6.67	13.85	12.86
Peak Flow/10 (cfs)	1.45	1.45	0.67	10.33	22.54
Peak Flow/25 (cfs)	3.05	3.05	1.00	12.84	28.02
Peak Flow/100 (cfs)	6.43	6.43	1.83	N/A	N/A
Min. Str. Area ($ft.^2$)	4.00	4.00	1.00	2.00	3.75
Req'd Area/10 ($ft.^2$)	0.37	0.19	0.16	0.94	1.71
Req'd Area/25 ($ft.^2$)	0.65	0.63	0.21	1.10	2.02
Req'd Area/100 ($ft.^2$)	1.13	1.10	0.34	N/A	N/A
Velocity (fps)	3.92	4.02	4.24	11.04	13.15
Hydraulic Length (ft.)	1600	-	400	N/A	N/A
Elev. Diff. (ft.)	64	-	16	N/A	N/A
Channel Bottom Width (ft.)	0.10	0.10	0.10	0.10	1.00
Channel Top Width (ft.)	6.00	6.00	2.00	3.00	4.00
Channel Depth (ft.)	1.50	1.50	1.00	1.50	1.50
Flow Depth/10 (ft.)	0.41	0.40	0.35	0.59	0.90
Flow Depth/25 (ft.)	0.54	0.54	0.41	0.66	1.01
Flow Depth/100 (ft.)	0.73	0.72	0.53	N/A	N/A

* Ditches conveying sediment pond outflow to natural drainage.

** Erosion-controlled portion of diversion - may be fitted with rip-rap or 1/2 - round, 24" cmp culvert.

TABLE V-12 (con't)

Undisturbed Diversion Summary

Structure	*UD-5	*UD-6	*UD-7	UD-8
Drainage Area (ac.)	2.29	7.85	7.50	13.79
10 yr.-24 hr. event (in.)	1.85	1.85	1.85	1.85
25 yr.-24 hr. event (in.)	2.15	2.15	2.15	2.15
100 yr.-24 hr. event (in.)	2.75	2.75	2.75	2.75
Time of Conc. (hrs.)	-	-	-	0.10
Curve Number	-	-	-	65
Manning's Number	.025	.025	.025	.025
Ditch Slope (%)	6.67	10.00	11.25	2.00
Peak Flow/10 (cfs)	3.22	11.03	8.79	4.31
Peak Flow/25 (cfs)	4.00	13.71	10.93	6.46
Peak Flow/100 (cfs)	N/A	N/A	N/A	N/A
Min. Str. Area ($ft.^2$)	2.00	2.00	2.00	2.00
Req'd Area/10 ($ft.^2$)	0.52	1.11	0.90	1.00
Req'd Area/25 ($ft.^2$)	0.61	1.30	1.05	1.35
Req'd Area/100 ($ft.^2$)	N/A	N/A	N/A	N/A
Velocity (fps)	6.15	10.54	9.80	4.30
Hydraulic Length (ft.)	N/A	N/A	N/A	300
Elev. Diff. (ft.)	N/A	N/A	N/A	80
Channel Bottom Width (ft.)	1.00	1.00	1.00	1.00
Channel Top Width (ft.)	3.00	3.00	3.00	3.00
Channel Depth (ft.)	1.00	1.00	1.00	1.00
Flow Depth/10 (ft.)	0.38	0.66	0.57	0.62
Flow Depth/25 (ft.)	0.43	0.75	0.64	0.77
Flow Depth/100 (ft.)	N/A	N/A	N/A	N/A

* Ditches conveying sediment pond outflow to natural drainage.

TABLE V-13
Disturbed Flow Ditch Summary

Ditch	Min. X-Sect. Area ($ft.^2$)	Drainage Area	Design Flow (cfs)	Slope (%)	Velocity (fps)
D-1a	1.00	E	2.33	3.33	4.44
D-1b	1.00	E	2.33	2.50	3.99
D-1c	1.96	E	4.66	2.54	4.76
D-1d	1.00	E	2.33	3.75	4.64
D-1	1.96	E	4.66	5.20	6.23
D-2	1.96	E	4.66	3.33	5.27
D-3	1.96	D	5.16	4.00	5.79
D-4a	1.96	C	5.64	2.80	5.18
D-4	1.96	C	5.64	8.00	7.68
D-5a	1.96	C	2.82	2.00	3.84
D-5b	1.96	C	2.82	2.00	3.84
D-5	1.96	C	5.64	4.55	6.21
D-6	1.69	C	2.82	2.67	4.28
D-7	1.00	C	2.82	5.33	5.56
D-8	1.00	C	2.82	3.66	4.82
D-9	1.96	C	5.64	2.85	5.21
D-10a	1.00	A	1.87	2.00	3.47
D-10	1.69	A	1.87	1.00	2.67
D-11a	1.00	A	1.87	2.00	3.47
D-11	1.00	A	1.87	6.67	5.46
D-12	1.96	A	2.75	1.67	3.57
D-13	2.16	A	4.43	2.62	4.72
D-15	1.69	B	3.22	3.57	4.94
D-16	1.00	B	1.61	3.00	3.90
D-17a	1.00	F	2.20	3.28	4.35
D-17	1.96	F	4.40	2.50	4.66
D-18	1.96	F	4.40	2.45	4.63
D-15T*	1.69	B	3.22	3.57	4.94

Note: (1) Velocities are based on Manning's Formula:
$V = \frac{1.49 R^{2/3} S^{1/2}}{n}$; where

n = 0.025, s = slope ft./ft.

(2) Erosion protection may prove necessary for any or all ditches. Erosion will be monitored and protection provided as necessary.

(3) See Figure IV-1C for typical ditch section.

* Temporary Ditch

TABLE V-13 (Con't)
Undisturbed Flow Ditch Summary

Ditch	Bottom Width (ft.)	Top Width (ft.)	Channel Depth (ft.)	Flow Depth (ft.)	Erosion Protection Y/N
D-1a	0.10	2.00	1.00	0.68	Y
D-1b	0.10	2.00	1.00	0.72	N
D-1c	0.10	2.80	1.40	0.94	Y
D-1d	0.10	2.00	1.00	0.66	Y
D-1	0.10	2.80	1.40	0.82	Y
D-2	0.10	2.80	1.40	0.89	Y
D-3	0.10	2.80	1.40	0.90	Y
D-4a	0.10	2.80	1.40	0.99	Y
D-4	0.10	2.80	1.40	0.81	Y
D-5a	0.10	2.80	1.40	0.81	N
D-5b	0.10	2.80	1.40	0.81	N
D-5	0.10	2.80	1.40	0.90	Y
D-6	0.10	2.60	1.30	0.76	Y
D-7	0.10	2.00	1.00	0.66	Y
D-8	0.10	2.00	1.00	0.72	Y
D-9	0.10	2.80	1.40	0.99	Y
D-10a	0.10	2.00	1.00	0.69	N
D-10	0.10	2.60	1.30	0.79	N
D-11a	0.10	2.00	1.00	0.69	N
D-11	0.10	2.00	1.00	0.54	Y
D-12	0.10	2.80	1.40	0.83	N
D-13	0.10	3.00	1.50	1.00	Y
D-14	0.10	2.80	1.40	0.93	Y
D-15	0.10	2.60	1.30	0.76	Y
D-16	0.10	2.00	1.00	0.59	N
D-17a	0.10	2.00	1.00	0.66	Y
D-17	0.10	2.80	1.40	0.92	Y
D-18	0.10	2.80	1.40	0.93	Y
D-15T	0.10	2.60	1.30	0.76	N/A

TABLE V-13A

Post-Mining Ditch Summary

Ditch	Min. X-Sect. Area (ft.²)	Drainage Area	Design Flow (cfs)	Capacity Flow (cfs)	Slope (%)	[3]Vel. (fps)	Erosion Prot. (y/n)
RD-1	4.00	D	9.42	30.24	6.67	7.56	Y
RD-2	4.00	D	9.42	20.92	3.20	5.23	Y
RD-3	4.00	[1]C	9.26	37.00	10.00	9.25	Y
RD-4	4.00	[2]C	18.52	37.00	10.00	9.25	Y
RD-5	4.00	[1]C	9.26	25.52	4.76	6.38	Y
RD-6	4.00	A	14.26	29.28	6.25	7.32	Y
RD-7	4.00	F	8.79	26.84	5.26	6.71	Y
RD-8	4.00	F	8.79	35.28	9.09	8.82	Y

Notes:

[1] 1/4 Drainage Area "C" Runoff

[2] 1/2 Drainage Area "C" Runoff

[3] Velocities based on Manning's Formula:

$$V = \frac{1.49\ R^{2/3}\ S^{1/2}}{n}$$; where

n = 0.032 (Rip-rap), s = slope in ft./ft.

~~TABLE V-14~~

~~Rip-Rap Specifications~~

~~Structure~~	~~Rip-Rap Size (in.) D15~~	~~D50~~	~~D85~~	~~Minimum Depth (in.)~~	~~Filter Blanket Depth (in.) (-3/4" Gravel)~~
~~UD-1 (Berms)~~	~~3.75~~	~~9.00~~	~~14.50~~	~~13.5~~	~~13.5~~
~~UD-1 (New Pond F)~~	~~7.50~~	~~18.00~~	~~28.75~~	~~27.0~~	~~27.0~~
~~UD-2 (C-33)~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~ND-1 (C-34)~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~UD-3 (Outfall)~~	~~7.50~~	~~18.00~~	~~28.75~~	~~27.0~~	~~27.0~~
~~UD-4 (Outfall)~~	~~10.00~~	~~24.00~~	~~38.50~~	~~36.0~~	~~36.0~~
~~C-6~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~C-9B~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~C-13 thru C-20~~	~~3.75~~	~~9.00~~	~~14.50~~	~~13.5~~	~~13.5~~
~~*D-1C~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~**D-1~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~*D-3~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~*D-4a~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~*D-4~~	~~3.75~~	~~9.00~~	~~14.50~~	~~13.5~~	~~13.5~~
~~*D-5~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~*D-7~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~*D-9~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~*D-11~~	~~3.75~~	~~9.00~~	~~14.50~~	~~13.5~~	~~13.5~~
~~*D-13~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~*D-14~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~*D-17~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~*D-18~~	~~2.50~~	~~6.00~~	~~9.50~~	~~9.0~~	~~9.0~~
~~RD-1 Thru RD-8~~	~~5.00~~	~~12.00~~	~~19.25~~	~~18.0~~	~~18.0~~

~~* To be installed only if erosion is evident. Other erosion protection may also be provided, such as half-round culverts, belting, downspouts, etc.~~

~~** Conveyor Belting presently used.~~

~~Other Sediment Control - ASCA~~

~~All topsoil piles are equipped with berms and have been revegetated. Andalex will not allow any topsoil pile to report directly to a sedimentation pond. This would result in a loss of topsoil material. The areas around these topsoil piles have been graded and revegetated to prevent erosion. A straw dike has been placed downstream from Pond B to prevent waterborne coal fines from leaving the permit area. This dike will be maintained throughout the life of the project.~~

~~There are seven (7) small areas which do not drain to sedimentation ponds (alternate sediment control areas {ASCA}). These are designated ASCA and all are shown on Plate 2. The areas each have an alternate sediment control method, consisting of strawbales, berms, vegetation or a combination of each. The total ASCA for this site is 17.51 acres or 26.07% of the total disturbed area. Drainage from each of these areas will be monitored for compliance with State and Federal limitations, to the extent possible. This will be accomplished by attempting to collect samples (as available) from points of discharge below the strawbales or other sediment controls. Topsoil piles with earth berms, which are ASCA's, will also be designed so that water will not be impounded. That is, berms will be notched so that water can flow through the notch. The straw berm will be placed in the notch and will function as alternate sediment control. The topsoil piles have berms only so that topsoil in the piles will not be lost.~~

~~Strawbales are placed on the ground to prevent undercutting or routing of flows around the bales. Berms and bales are maintained on a regular basis and cleaned, repaired or changed out as needed. All control structures will be removed upon final reclamation of the site.~~

~~Table V-15 is a summary of each of the ASCA along with size, runoff volume and treatment methods.~~

~~TABLE V-15~~
~~ASCA~~

~~ASCA Area*~~	~~Area (Acres)~~	~~*Runoff Volume (ac. ft.)~~	~~Treatment Method~~
~~1~~	~~0.84~~	~~0.07~~	~~Vegetation~~
~~2~~	~~0.44~~	~~0.04~~	~~Vegetation~~
~~3~~	~~9.98~~	~~0.84~~	~~Straw Bales/Vegetation~~
~~4~~	~~3.42~~	~~0.29~~	~~Straw Bales/Vegetation~~
~~5~~	~~2.00~~	~~0.17~~	~~Straw Bales/Vegetation/Berm~~
~~6~~	~~0.57~~	~~0.05~~	~~Vegetation~~
~~7(F)~~	~~0.26~~	~~0.02~~	~~Vegetation/Berm~~
~~Totals~~	~~17.51~~	~~1.48~~	~~---~~

~~*Runoff Volumes are based on a 10 year - 24 hour event and a runoff CN of 90.~~

Post Mining Hydrology

Introduction

The purpose of this section is to describe the plan for control of the permit and adjacent area hydrology during and after reclamation until bond release.

Methodology

The plans herein described are based on requirements of the regulations and on proven, accepted reclamation techniques used in the Carbon-Emery area. The post-reclamation hydrology is designed to protect the reclaimed site from erosion, to protect the hydrologic regime from adverse impacts, and to meet requirements of DOGM and the landowner, BLM.

Reclamation Hydrology

Upon completion of operations, all structures will be removed and the area will be recontoured as shown on Plate 8. All culverts and unnecessary ditches and ponds will be removed at that time. The post-reclamation drainage will be as shown on Plates 8 and 9.

Undisturbed diversions will remain in place, since these were installed prior to the operation, and they have been shown to be adequate to carry a 100 year, 24 hour precipitation event.

Sedimentation Ponds A, C, D, and F will remain in place until revegetation standards are reached (Phase I). At that time, the ponds will be removed and reclaimed (Phase II). Disturbed drainage flow paths will be reconstructed during reclamation to direct reclaimed area runoff to the various ponds. The reconstructed flow paths are shown on Plates 8 and 9, and are designated RD-1, RD-2, ... for Reconstructed Ditch. Design specifications for the reconstructed interior ditches are shown on Table V-13A, "Post-Mining Ditch Summary". All reconstructed ditches will be built to a minimum cross-sectional area of 4 $ft.^2$, and will be rip rapped with a minimum of 12" D50 rock overlying a filter blanket of 3/4" gravel. A typical section of the restored channel is shown on Figure V-3. Rip-rap design is based on the chart in Figure V-4. Once the ponds are removed, the drainage flow paths will be extended as shown on Plate 9. The retained ponds are shown "dotted" on Plate 8 to show the pond in relation to the reclaimed drainage pattern prior to and after its' removal. Ponds B and E will be eliminated during the first phase of reclamation. These are small ponds and the drainage is redirected to Ponds A, C, and D respectively, which are adequately oversized to contain the extra runoff. As shown on Table V-6A, all retained ponds have adequate capacity. Post-

~~mining pond sizing is shown on Tables V-2A through V-6A. For additional information including detail on removal of surface structures, please refer to this chapter, re: Reclamation.~~

~~As shown on Plate 8, berms will be employed to direct drainage during Phase I Reclamation. Berms will consist of straw bales (1 bale high) or native earth a minimum of 24" high x 36" minimum at the base x 12" minimum across the top. All berms will be removed during Phase II Reclamation, and any disturbed areas will be regraded as necessary and reseeded along with removal of the sediment ponds (See Plate 9 for final configuration).~~

~~Access roads will not be reclaimed until Phase II. At this time, roads and culverts will be removed and the areas revegetated. Straw bale berms will be placed along the downstream ends of the reclaimed roads to control sediment.~~

~~During Phase I reclamation, when Ponds B and E are removed, diversion UD-5 will also be eliminated to the permit boundary. This will be accomplished by filling in the diversion with adjacent material. Straw bales will be placed as necessary to control sediment from the reclaimed pond and diversion.~~

~~As sediment ponds are removed, any contaminated material will be hauled off to an approved disposal site. The ponds will be recontoured and drainage through the area re-established as shown on Plate 9. Longitudinal profiles of the reclaimed ponds are shown on Plates 3, 4, 5, 6, and 7. As indicated earlier, the 2-celled Permanent Impoundment will be left inplace for wildlife enhancement.~~

~~Reclamation Water Monitoring~~

~~Water monitoring of the surface stations and remaining ponds will continue after reclamation, until bond release. The frequency of monitoring will be as shown on Table V-11 for "Postmining". Parameters monitored will be the same as those for operational sampling.~~

~~Figure V-3~~
~~Post Mining Ditch~~
~~Typical Section~~

~~Figure V-4~~

~~Size of Riprap to be used Downstream from Stilling Basins~~

R645-301-512.250. PRIMARY ROADS (Also R645-301-527 and R645-301-534)

All roads within the permit area are classified as "Primary Roads" in accordance with R614-301-527.100. Primary roads on the site are of 2 typical designs:

1. Single-lane, gravel-surfaced roads approximately 16' 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 road is constructed to the respective typical design and dimensions shown on Plates 17 and 17A.

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

Primary Road 1 (PR-1) - This section is a double-lane, asphalt surfaced road connecting the county road to the Wildcat Facilities. The road serves as both a main access and a coal haul road. This section of road is approximately 800' long and runs on a grade of approximately 4.875%. The finished width of the road is approximately 26', as shown on the typical section on Plate 17.

Primary Road 2 (PR-2) - This section is a single-lane, gravel surfaced road connecting the Mine Run Coal Storage Truck Loop to the previously described Primary Road 1. This road is used primarily by coal trucks bringing coal onto the site. This road section is approximately 2050' long and runs on a grade of 1.25% to a maximum of 8,000% a the top of the loop. The top width of the road is approximately 16' as shown on Plate 17A.

Primary Road 3 (PR-3) - This section of road is a double-lane, asphalt surfaced road connecting the truck scale area to the county road on the northeast end of the site. The road is used primarily for coal haulage exiting the site; however, it is also used as a secondary access to the property. The road is approximately 490' long and is on a grade of approximately 0.20%. The finished width of the road is approximately 26' as shown on Plate 17.

Primary Road 4 (PR-4) - This section is a double-lane gravel-surfaced road leading from the Beaver Creek Shop/Warehouse Road to the northern truck dump at the Wildcat Facility, and single-lane around the truck loop. This road is used primarily for coal haulage, but also provides access to the permit area north of the

railroad. The double-lane portion of the road is approximately 700' long and is on a grade averaging less the 2.10%. The single-lane portion is approximately 550' long around the truck loop, and also averages less than 4% in grade, with the maximum grade at 7.06%. The double-lane road width is approximately 26' as shown on Plate 17, and the single-lane portion is approximately 16' wide as shown on Plate 17A.

Primary Road 5 (PR-5) - This road leads from the Primary Road 2 (Mine Run Truck Loop) along the eastern perimeter of the main coal pile to the Loadout Tower. Much of the road is used primarily for access by support equipment. This is a single-lane road, approximately 2100' long and runs on an average grade of 2.5%. The finished road width is approximately 16' as shown on Plate 17A. *Parts of this road are graveled. However, the portion immediately adjacent to the coal pile is presently constructed on native material. Under phase 1 of the 2008 Modification Plan the truck-haul portion of this road, along with the ramp up to the coal pad, will be re-constructed with a substantial gravel base and treated with a chemical dust supressant. Under phase 2 of the plan the road will be re-routed around the eastern edge of the expanded coal storage area, and will be constructed with a gravel base suitable for haul truck traffic.*

Primary Road 6 (PR-6) - This road runs from the Loadout Tower area along the east edge of the railroad to the Truck Scale Area. This road is also used primarily for access by support equipment, although the northern portion is occasionally used for coal haulage. This is a single-lane, gravel-surfaced road, approximately 2150' long and runs on an average grade of 2.26%, with a maximum grade of 9.80% for less than 100'.

Primary Road 7 (PR-7) - This road lends from the northern truck dump around to the Permanent Impoundment Area and south to the Waste Coal Storage Area. This road is used primarily for support equipment access and occasionally for waste coal haulage. The road is approximately 1300' long and runs on a grade of a minimum of 0.09% on the southern area to a maximum of 2.00% between the truck dump and impoundment area. The road width is approximately 16' as shown on Plate 17A.

Primary Road 8 (PR-8) - This road leads from the northern truck dump, through the "Depression Area" and connects to Primary Road 7 near the southern end. The road is used primarily for access to the west property and "Depression Area" by support vehicles and loaders; however, coal and coal refuse are also occasionally hauled here. The road is approximately 800' long and runs on a grade from a minimum of 0% on the southern end to a maximum of 9.26% for approximately 100' near the truck loop. The road width

is approximately 16', single-lane, gravel-surface as shown on Plate 17A.

Primary Road 9 (PR-9) - This road runs between Primary Road 5 and Primary Road 6, and provides access to the Coal Stockpile as well as to other facilities. The road is used primarily for access by support vehicles. The road is approximately 740' long and runs on an average grade of 2.00%. Road width is approximately 16'; single-lane, grave-surfaced as shown on Plate 17A.

Primary Road 10 (PR-10) - This road connects Primary Road 5 to Primary Road 6 near the Loadout Tower. This is a single-lane, gravel-surfaced road, approximately 380' long. The grade on this road runs from 0% to a maximum of 2.86%. The road is used primarily for support vehicle access. Road width is approximately 16' as shown on Plate 17.

Primary Road 11 (PR-11) This road will be branch off PR-7 and will extended north of the refuse pile to provide access to the new material storage area under the 2008 Modification Plan. (see Plate 1A)

Actual coal haul roads are those designated Primary Roads 1 through 5; however, since all roads are classified as primary, and since each was constructed according to a standard design as shown on Plates 17, the following information is applicable to all roads at this site.

All primary roads at this site have been designed and constructed to meet the requirements of R614-301-534.300 and R614-301-742.420, and are certified as such.

All roads are located on the most stable surface available, generally on natural ground. There are no stream fords at this site; however, ephemeral channel crossings are provided by approved, adequately sized culverts. Drainage control is provided along all roads by the use of adequately sized ditches and culverts as necessary.

All roads are constructed and maintained to minimize disturbance and adverse impacts on fish, wildlife and related environmental values. This is accomplished through the use of current, prudent engineering design practices, proper drainage control, dust control, speed control and frequent maintenance. Roads are maintained to meet applicable design standards throughout their use by blading, watering, treatment with dust control agents such as magnesium chloride, and resurfacing as necessary.

Roads are located, designed, constructed, used, maintained, and will be reclaimed so as to prevent or control damage to public or

private property; they will use non-acid and non-toxic forming substances in surfacing; and they will have a static safety factor or 1.3 or greater for all embankments.

Roads will be reclaimed immediately after they are no longer required for the operations. Road reclamation will take place simultaneously with the property reclamation. ~~during Phases I and II.~~ Roads will be reclaimed as per the plan, including: (1) Restoring natural drainage patterns; (2) Reshaping cut fill slopes to be compatible with the post-mining land use; (3) Removal of all structures (culverts, bridges, etc.); (4) Revegetation. No roads are planned to be left at this site after final reclamation.

R645-301-512.260. VARIANCE FROM APPROXIMATE ORIGINAL CONTOUR

N/A - The site will be reclaimed to approximate original contour.

R645-301-513. COMPLIANCE WITH MSHA REGULATIONS AND MSHA APPROVALS

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.

R645-301-513.100. COAL PROCESSING WASTE DAMS AND EMBANKMENTS

N/A - See R645-301-512.230

R645-301-513.200. IMPOUNDMENTS AND SEDIMENTATION PONDS MEETING MSHA CRITERIA

N/A

R645-301-513.300. WASTE DISPOSED IN UNDERGROUND MINE WORKINGS

N/A

R645-301-513.400. REFUSE PILES

A refuse pile is permitted at the Wildcat Loadout facility for disposal of coal processing waste and sediment cleaned from sediment ponds. This pile is permitted by MSHA with I.D. number 1211-UT-09-01864-01.

The pile is constructed, maintained and inspected in accordance with MSHA regulations, 30 CFR 77.214 and CFR 77.215.

Pile design and operation are detailed in Section R645-301-512-230 and Appendix O.

R645-301-513.500. MINE OPENINGS

N/A

R645-301-513.600. DISCHARGES INTO AN UNDERGROUND MINE

N/A

R645-301-513.700. SURFACE COAL MINING CLOSER THAN 500 FEET TO AN ACTIVE UNDERGROUND MINE

N/A

R645-301-513.800. COAL MINE WASTE FIRES

See R645-301-512.230

R645-301-514. INSPECTIONS

All engineering inspections, excepting those described under R645-301-514.330, will be conducted by a qualified registered professional engineer or other qualified professional specialist under the direction of the professional engineer.

R645-301-514.100. EXCESS SPOIL

N/A - There are no excess spoil piles.

R645-301-514.200. REFUSE PILES

The refuse pile is inspected quarterly by a registered professional engineer in accordance with this section and as required by 30 CFR 77.215.2. The disposal plan is detailed in Appendix O.

R645-301-514.210. REGULAR INSPECTIONS

See R645-301-514.200 and Appendix O.

R645-301-514.220. CRITICAL CONSTRUCTION PERIODS

See R645-301-514.200 and Appendix O.

R645-301-514.221. FOUNDATION PREPARATION AND TOPSOIL REMOVAL

Completed. There are no plans for additional foundation preparation or topsoil removal.

R645-301-514.222. UNDERDRAINS

N/A - There are no underdrains.

R645-301-514.223. FINAL SURFACE DRAINAGE SYSTEMS

As required by R645-301-514.210.

R645-301-514.224. FINAL GRADING AND REVEGATATION

As required by R645-301-514.210.

R645-301-514.230. CERTIFIED REPORT

A certified report is provided for Division review promptly after

each inspection. The report includes appearances of instability, structural weakness and other hazardous conditions, as well as condition of surface drainage.

R645-301-514.240. SEPARATE CERTIFICATION FOR EACH PHASE OF CONSTRUCTION

N/A - There are no underdrains or protective filters.

R645-301-514.250. ON-SITE COPY OF CERTIFICATION REPORTS

A copy of each inspection report is maintained on-site.

R645-301-514.300. IMPOUNDMENTS

See R645-301-512.240.

R645-301-514.310. CERTIFIED INSPECTION

This is performed annually by a registered P.E.

R645-301-514.311. COMPLETION OF CONSTRUCTION AND YEARLY INSPECTIONS

See R645-301-514.310.

R645-301-514.312. CERTIFIED REPORTS

Certified reports are kept on-site, and submitted with Annual Reports.

R645-301-514.313. ON-SITE COPY OF CERTIFICATION REPORTS

See R645-301-514.312.

R645-301-514.320. WEEKLY INSPECTIONS

N/A

R645-301-515. REPORTING AND EMERGENCY PROCEDURES

R645-301-515.100. SLIDES AND OTHER DAMAGE

The Wildcat Loadout is located on relatively flat ground, making the probability of a slide extremely remote.

If a slide should occur which may have a potential adverse effect on public, property, health, safety, or the environment, Andalex will notify the Division by the fastest available means and comply with any remedial measures required by the Division

R645-301-515.200. IMPOUNDMENT HAZARDS

Safety Precautions

The ponds were built as per specifications and under supervision of a qualified, registered professional engineer. The ponds are inspected quarterly for safety and compliance. Inspection reports are maintained on-site, and submitted to the Division on an annual basis. Ponds will be cleaned at minimum when sediment reaches 60% of designed sediment volume. Measuring devices will be installed in the ponds to show when the ponds have filled with sediment to the clean-out level.

R645-301-515.300. TEMPORARY CESSATION OF OPERATIONS

Whenever it is known that operations are to be temporarily ceased for more than 30 days, Andalex Resources will submit to the Division a notice of intention to cease or abandon the operations, in accordance with R645-301-515.320 and to MSHA standards.

This notice will describe mitigation measures to be employed in accordance with the terms and conditions of the permit approval, such as a statement of the number of surface areas involved in the cessation, prior reclamation efforts accomplished on the property, and identification of all backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during the temporary cessation.

R645-301-515.310. TEMPORARY ABANDONMENT

See R645-301-515.300.

R645-301-515.311. SUPPORT AND MAINTENANCE

N/A

R645-301-515.312. SECURING SURFACE FACILITIES

Locked gates will be employed to prevent access to the site during temporary closures.

R645-301-515.320. NOTICE OF INTENT TO CEASE OR ABANDON OPERATIONS

See R645-301-515.300.

R645-301-515.321. STATEMENT OF CONDITIONS PRIOR TO CESSATION OR ABANDONMENT, UNDERGROUND

See R645-301-515.300.

R645-301-515.322. STATEMENT OF CONDITIONS PRIOR TO CESSATION OR ABANDONMENT, SURFACE

See R645-301-515.300.

R645-301-516. PREVENTION OF SLIDES

Andalex has agreed to interim stabilization of all slopes and embankments within the disturbed area and has done so. Andalex will notify the Division in the event of any slides or other damage.

R645-301-520. OPERATION PLAN (Also R645-301-526)

R645-301-521. GENERAL

Overview of Project

General Description

The new unit train loadout facility at Wildcat Junction is approaching the three million ton mark. To date, close to 350 unit trains have been loaded with no operating failures or significant difficulties.

The facility is designed to provide rapid train loading with an automatic sampling system meeting ASTM standards. The sampling system is a Redding Three Stage Sampler. The bulk weighing system is accurate to 0.1% and is certified by the State of Utah, Bureau of Weights and Measures every six months.

The stockpiling and reclaim system is designed to reduce handling and consequently degradation. It provides segregated stockpiles for each of the three seams which will be mined simultaneously from Andalex's Centennial Project. With segregated stockpiles, Andalex will have the capability of either a single seam shipment or a blended seam shipment meeting any customer's requirements. The stockpile has been designed to provide adequate live storage to allow multiple unit-trains to be discharged from Wildcat successively in order to meet the demands of ship-loading and the export market.

Summary Description

Loadout Structure

5,000 tph loading rate, 300 ton surge bin, 120 ton weigh bin, programmable batch weighing system, 3 stage automatic sampler, operator control room.

Reclaim Conveyor

72" belt, 815 fpm, 1,200 hp, length = 1,035'. Four each 100' truss sections, 2 each support bents, vertical gravity take-up tower.

Reclaim Transfer Conveyor (3 each)

54" belt, 75 hp, length = 75'

Under-pile Reclaim

Nine each storage pile activators, 2,500 tph capacity each, flow control by double bladed slide gates, 30' diameter inlet cones, pile activators connected by 13' diameter multiplate tunnel. Total tunnel length = 700'.

Storage Pile

Height = 85', crest length = 468'. Three segregated piles: total storage = 106,000 t, live storage = 55,000 t. Extended (co-mingled) pile: total storage = 135,000 t, live storage = 70,000 t.

Radial Stacker

Underslung truss design, 110° arc of swing, 247' long, 36" Conv, 600 tph, 600 fpm, 100 hp drive.

Yard Conveyor From Crusher to Stacker Building (Conv Y)

36" belt. 600 tph, 450 fpm, 75 hp drive, length = 470', transfer structure at radial stacker supporting drive unit and electrical control room.

Crusher Building

600 tph impact crusher (125 hp), 2" x 0" product, 4' x 14' double deck screen, Conv T drive unit, electrical control room.

Conveyor From Truck Dump To Crusher Building (Conv T)

48" belt, 600 tph, 250 fpm, 75 hp, length = 150'. Belt scale, metal detector, tramp iron magnet.

Truck Dump

100 ton surge capacity, drive-over grizzley for end or bottom dump trucks, dozer trap opening for reclaim of run of mine storage area with a capacity of 150,000 tons.

Unit-Train Loading Track

115 lb. rail, total length = 10,133', 1 each turnout, 3 each cross overs, 1 each bumper, 2 each high stand throw switches, 3 each spring switches.

Office Building

30' x 40' containing office, small warehouse, and lab. A small temporary change room trailer is located next to the office.

Scale House

14' x 60' trailer, 60' platform scales.

Shop Building

40' x 40' metal building, concrete foundation

Magnesium Chloride Storage Tank

8' x 20' metal tank, concrete stand

<u>Electrical</u>

Substation

2,500 KVA, 46,000 V to 4,160 V transformers, capacitors for

power factor correction, designed to comply with appropriate MSHA and UP&L requirements

Yard Power

4,160 V distribution reduced to 480 V at crusher building, stacker, reclaim tunnel exit and loadout structure, transmission line = 2,600', 45' poles.

Electrical Control Rooms

Crusher Building

Motor controls, switchgear, and associated electrical controls for crusher, screen, Conv "T" drive, reclaim vent fan, scale, magnet, metal detector, water pump, and area lighting

Stacker Area (Control Room Located On Transfer Structure)

Motor controls, switchgear, and associated electrical controls for Conv "Y" drive, conveyor "S" drive, stacker propelling drive, water pump, office building, mobile equipment servicing station and area lighting

Reclaim Area (Control Room Located Near Tunnel Exit On West Side of Conv "R")

Motor controls, switchgear, and associated electrical controls for Conv "RT" drive, all storage pile activators, hydraulic power pack drives (for gate actuation), reclaim sensor scale, gate position feedback controls, methane monitors, and area lighting (including reclaim tunnel)

Loadout Area (Electrical Controls Located In Operators Control Room)

Motor controls, switchgear, and associated electrical controls for Conv "R" drive (4,160 V), batch weighing system, sampling system, car spotter, and area lighting

Electrical Class

All motors, starters, switchgear, and controls can be Class II, Div. II, even in the reclaim tunnel. However, 2 each methane monitors are to be installed in the reclaim tunnel and 1 each in the truck dump which will deactivate all electrics in the tunnel if methane is detected. Lighting in the tunnels must meet Class I, Div. I requirements.

<u>Water</u>

Tanks

2 ea., 10,000 gal., treated for culinary, 35 hp centrifugal pump, enclosed tankside pump houses

Tank Location

- At crusher building to serve crusher building and truck dump
- At office building (culinary usage)

Area of Operations

Proposed Permit Area

The proposed permit area consists of BLM right-of-way U-48027 and is shown on Plates 1 and 1A.

Surface Area to be Disturbed

The permit area has been previously impacted by mining and loading. The entire permit area at Wildcat has been used for loading and coal storage previously. The total existing surface area disturbed is ~~60.94~~ acres excluding the ASCA Areas and Utah Railway Tracks. Facilities are indicated on Plate 1.

The additional areas to be disturbed as part of the 2008 Modification Plan include the following:

1)	*Existing disturbed operational area*	*59 15 ac.*
1a)	*Existing topsoil pile area*	*1.79 ac.*
	Total existing disturbed area	*60.94 ac.*
2)	*Extended coal storage area/drop zone*	*6.71 ac.*
3)	*Material storage area*	*6.29 ac.*
4)	*New sediment ponds/ditches*	*3.18 ac.*
5)	*New topsoil piles*	*4.67 ac.*
	Total new (2007 MP) disturbance	*20.85 ac.*
	Total disturbed area	*81.79 ac.*
	(Operational areas to be re-topsoiled	*75.33 ac.)*
	(Areas of topsoil piles)	*6.46 ac.)*

Refer to Plate 13C, Plate 1 and 1A for detailed map delineation of the existing and proposed disturbance associated with the 2008 Modification Plan. Refer to Appendix S for a detailed discussion of the additional disturbance associated with the 2008 Modification Plan.

~~The disturbed area boundary has been modified to include additional area to the east of the main stockpile (radial stacker) (see Plate 22). This area has been lightly covered by wind-carried coal fines over the nine year history of Wildcat. Therefore, it is necessary to include this additional 3.7 acres as part of Andalex's disturbed area. It should be noted that this additional acreage does not constitute a significant revision (6%). Upon final reclamation this area will be cleaned of wind-carried coal fines and revegetated in a similar fashion to existing disturbed areas. Runoff from this area is currently passed through straw dikes. These dikes will be maintained on an annual basis as necessary.~~

~~Andalex has used, from time to time, a vacuuming system to pick up wind-carried coal fines at the minesite. Andalex proposes to clean as many coal fines as is practical at the Wildcat Loadout in the area east of the main stockpile. This vacuum system will be utilized in the Spring of 1994 and thereafter as necessary.~~

~~It should also be noted that due to the reoccurring situation regarding wind-carried coal fines, Andalex proposes to construct additional drift-fences near the eastern boundary of the disturbed area. Drift-fences have proven to be effective in the past at Wildcat and, therefore, additional fences will aid in controlling wind-carried coal fines. These additional fences are depicted on the revised Plate 22.~~

Life of Project

The life of the project has been estimated at 30 years.

Schedule of Construction, Mine Development, Mining, and Reclamation

All surface facilities have been constructed for the Wildcat Loadout, *other than those associated with the 2008 Modification Plan. Structures proposed as part of this plan include sediment ponds, topsoil piles, an extended coal storage pad, and a material storage pad. These structures are described in greater detail in Appendix S, "2008 Modification Plan".* Reclamation efforts, including, but not limited to, backfilling, grading, topsoil replacement, and revegetation, of all land that is disturbed by surface operations shall occur as contemporaneously as practicable with mining operations. Upon the conclusion of loading activities, the scheduled reclamation phase will begin immediately. Please refer to Part F of this Chapter re Reclamation.

Cessation of Operations

Temporary

Andalex will inform the division if it intends to cease operations for a period of more than thirty days. This notice will include information on any activities which may continue while the facility is not in use (water monitoring, etc.).

Permanent

Upon permanent cessation of operations, Andalex will reclaim all affected areas according to its' approved MRP and return the land to its' pre-mining conditions.

Wildcat Operations

Exploration and Development Drill Sites

Shallow holes for bedrock determination were drilled for foundation studies. Please see Appendix C.

Blasting

No blasting will occur at this facility.

Water Supply

Water is trucked into the facility by a local contractor and stored in 2 - 10,000 gallon storage tanks. One tank is used to supply culinary water to the bathhouse facilities and the other tank provides water for dust suppression for the preparation and loading operations.

There is no on-site development of surface or underground water for this facility. There are no wells.

Power Supply and Communication Facilities

Power and communications were pre-existing at this location. Andalex tapped the 46 KV powerline serving Beaver Creek Coal Company's mines and via an onsite substation, distributing 4160, 440, 220, and 110 V lines throughout the facility.

Landscaping

All disturbed areas are relatively flat, and vegetative cover has been promptly re-established to stabilize erosion.

Signs, Markers, Fences, and Gates

Signs of a uniform design, showing the company name, business address, and telephone number as well as the identification

number of the current regulatory program permit authorizing the underground mining activities, have been placed at all access points to the permit area. These signs have been placed to be easily seen, are made of a durable material, and conform to local laws and regulations. The topsoil storage area is clearly marked.

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.

Coal Handling Facilities

Please refer to this chapter, re: Description of Facilities.

Removal of Surface Structures

Upon completion of activities, all surface facilities will be removed. This includes all the facilities outlined in this chapter, re: Description of Facilities. Please refer to this chapter, re: Reclamation for the detailed plans. Also refer to this chapter, re: Reclamation Hydrology.

Operation Plan: Existing Structures

Construction and Design of Surface Facilities

Existing Structures

All existing structures are situated on Right-of-Way U-48027. Please refer to this chapter, re: Description of Facilities. Upon completion of loading activities, all buildings and structures not being utilized as part of the reclamation sequence, will be removed, according to the Reclamation Plan outlined in this chapter.

Construction

All of the above structures have been completed. Construction began in the spring of 1984 and was completed in the spring of 1985. Construction has been located and carried out so as to prevent and control erosion, siltation, water pollution, and damage to property in accordance with the regulations. All facilities have been designed and constructed and will be maintained and used in a manner which prevents damage to wildlife and related environmental values (particularly as this relates to powerline structures, regarding Fish and Wildlife). Andalex has

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

Construction Methods

Major Equipment

The building sites were leveled using dozers and graders. Excavations for foundations was accomplished with backhoes and scrapers. Leveling was required at all the building sites; however, cut and fill was not implemented to a large degree because the area is relatively flat lying. Topsoil was removed and transported to a nearby area for storage. Topsoil was gathered using scrapers and graders. All topsoil storage piles are located within the permit area.

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

R645-301-521.100. CROSS SECTIONS AND MAPS

See R645-301-510, Volume II

R645-301-532.110. PREVIOUSLY MINED AREAS

See R645-301-510, Volume II

R645-301-521.111. LOCATION AND EXTENT OF KNOWN WORKINGS

N/A

R645-301-521.112. EXISTING OR PREVIOUSLY SURFACE MINED AREAS

See R645-301-510 and Volume II.

R645-301-521.120. EXISTING SURFACE AND SUBSURFACE FACILITIES AND FEATURES

See R645-301-510.

R645-301-521.121. BUILDINGS IN AND WITHIN 1000 FEET OF THE PERMIT AREA

There are no buildings within 1,000 feet of the permit area except those used as part of the operation. They are shown on Plates 1 and 2.

R645-301-521.122. SURFACE AND SUBSURFACE MAN-MADE FEATURES WITHIN THE PERMIT AREA

There are no surface or subsurface man-made features within, passing through or passing over the permit area except the railroad, powerline, telephone cables, culverts, and etc., installed for the operation of this mine. See Plates 1 and 2 for their locations.

R645-301-521.123. PUBLIC ROADS IN OR WITHIN 100 FEET OF THE PERMIT AREA

The Consumers county road (Formerly State Highway 139) starts at highway 6 in Gordon Creek and bypasses the Andalex Resources' Wildcat Loadout (Plate 1). There are 2 entrances from the County Road into the permit area, as shown on Plate 1. *There is also a public road (BLM) which runs along the east side of the property.*

R645-301-521.124. EXISTING FACILITIES WITHIN THE PERMIT AREAS

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 Plates 1 and 2 for their locations.

R645-301-521.125. SEDIMENTATION PONDS AND IMPOUNDMENTS

See R645-301-512.240.

R645-301-521.130. LANDOWNERS AND RIGHT OF ENTRY AND PUBLIC INTEREST MAPS

The right-of-way for which we have the legal right of entry is shown on Plate 1.

R645-301-521.131. SURFACE AND SUBSURFACE OWNERS

Owners of Record of Surface and Subsurface Contiguous Areas

All surface and subsurface areas contiguous to the permit area are owned by the United States *or State of Utah.* The name and address of the responsible authority representing the federal government is as follows:

Bureau of Land Management
Utah State Office
Federal Building
Salt Lake City, Utah 84111
(801) 524-3004

The name and address of the responsible authority representing the state government is as follows:

Utah School and Institutional Trust Lands (SITLA)
675 East 500 South, Suite 500
Salt Lake City, Utah 84102
(801) 538-5100

See Plate 16 for surface and sub-surface ownership.

R645-301-521.132. RIGHT TO ENTER AND CONDUCT MINING ACTIVITIES

See R645-301-114.230.

R645-301-521.133.1 OPERATIONS WITHIN 100 FEET OF ROAD RIGHT-OF-WAY

See R645-301-521.123.

R645-301-521.133.2 RELOCATING A PUBLIC ROAD

N/A

R645-301-521.140. MINE AND PERMIT AREA MAPS

Cross Sections, Maps, and Plans **(Also R645-301-510 and Volume II)**

The lands affected by this operation (surface only) are clearly shown on Plate 1. Plate 1 depicts all buildings, utilities, and facilities. All of the land within this permit area which is to be affected already has been. This is a surface facility only and involves no underground workings. The bond required by the Division is for the entire affected area including all the

surface facilities.

Coal storage, topsoil storage, loading areas, coal preparation waste areas are all depicted on the surface facilities map. Additional detail on topsoil, diversions, and ponds can be found in Volume II on Plates 13, 2, and 3 through 7 respectively.

There is no storage of explosives at the Wildcat Loadout.

The final surface configurations will be similar to the surface prior to Andalex's involvement at Wildcat *as shown on Plate 9.*

Surface water monitoring locations are shown on Plate 15.

After the completion of activities at this facility, no structures will remain with the exception of the railroad grade, the tracks, and it's associated drainage structures.

All maps requiring certifications by a registered person have been done so. Included are stamps from experts in related fields such as surveying.

PLATES

PLATE #	PLATE TITLE
Plate 1	Existing Surface Facility Map
Plate 1A	Proposed Surface Facility Map
Plate 2	Drainage Map
Plate 3A	Sediment Pond C
Plate 3B	Sediment Pond E
Plate 3C	Sediment Pond F
Plate 3D	Sediment Pond G
Plate 3E	Sediment Pond H
Plate 3F	Sediment Pond I
Plate 3G	Permanent Impoundment
Plate 3H	Depression Area
Plate 4	Deleted
Plate 5	Deleted
Plate 6	Deleted
Plate 7	Deleted
Plate 8	Reclamation Hydrology
Plate 9	Final Reclamation
Plate 10	Deleted
Plate 11	Soils Map
Plate 12	Geology Map
Plate 13A	Topsoil Piles
Plate 13B	Topsoil Piles
Plate 14	Deleted
Plate 15	Watershed Map
Plate 16	Surface and Subsurface Ownership Map
Plate 17	Typical Road Cross-sections
Plate 18	Deleted
Plate 19	Deleted
Plate 20	Deleted

R645-301-521.141. AFFECTED AREA

R645-301-521.142. UNDERGROUND WORKINGS AND SUBSIDENCE AREAS

N/A

R645-301-521.143. WASTE DISPOSAL SITES

See R645-301-510, Volume II.

R645-301-521.150. LAND SURFACE CONFIGURATION MAPS

See R645-301-510, Volume II.

R645-301-521.151. REQUIREMENTS

See R645-301-510, Volume II.

R645-301-521.152. PREVIOUSLY MINED AREAS

See R645-301-510, Volume II.

R645-301-521.160. MAPS OR CROSS SECTIONS OR PROPOSED FEATURES

See R645-301-510, Volume II.

R645-301-521.161. BUILDINGS, UTILITY CORRIDORS AND FACILITIES

See R645-301-510, Volume II.

R645-301-521.162. AREA AFFECTED ACCORDING TO SEQUENCE AND TIMING OF OPERATIONS

See R645-301-510, Volume II.

R645-301-521.163. BONDED AREA

See R645-301-510, Volume II.

R645-301-521.164. COAL HANDLING FACILITIES

See R645-301-510, Volume II.

R645-301-521.165. TOPSOIL AND WASTE STORAGE AREAS

See R645-301-510, Volume II.

R645-301-521.166. WASTE SOURCES AND DISPOSAL FACILITIES

See R645-301-510, Volume II.

R645-301-521.167. EXPLOSIVES STORAGE AND HANDLING FACILITIES

N/A

R645-301-521.168. AIR POLLUTION CONTROL FACILITIES

N/A

R645-301-521.169. COAL PROCESSING WASTE FACILITIES

See R645-301-510, Volume II.

R645-301-521.170. TRANSPORTATION FACILITIES MAPS

See R645-301-510, Volume II.

R645-301-521.180. OTHER INFORMATION

See R645-301-510, Volume II.

R645-301-521.190. OTHER RELEVANT INFORMATION REQUIRED BY THE DIVISION.

At this time, there has been no other information required by the division.

R645-301-521.200. SIGNS AND MARKERS SPECIFICATIONS

Signs of a uniform design, showing the company name, business address, and telephone number as well as the identification number of the current regulatory program permit authorizing the underground mining activities, have been placed at all access points to the permit area. These signs have been placed to be easily seen, are made of a durable material, and conform to local laws and regulations. The topsoil storage area is clearly marked.

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.

R645-301-521.210. PLACEMENT AND REMOVAL

See R645-301-521.200.

R645-301-521.220. DESIGN

See R645-301-521.200.

R645-301-521.230. MAINTENANCE

See R645-301-521.200.

R645-301-521.240. MINE AND PERMIT IDENTIFICATION SIGNS

See R645-301-521.200.

R645-301-521.241. LOCATION, UNDERGROUND MINING

See R645-301-521.200.

R645-301-521.242. LOCATION, SURFACE MINING

N/A

R645-301-521.243. INFORMATION

See R645-301-521.200.

R645-301-521.244. REQUIREMENTS

See R645-301-521.200.

R645-301-521.250. PERIMETER MARKERS

See R645-301-521.200.

R645-301-521.251. SURFACE AFFECTED AREAS FOR UNDERGROUND MINING OPERATIONS

See R645-301-521.200.

R645-301-521.252. PERMIT AREA PERIMETER FOR SURFACE MINING OPERATIONS

N/A

R645-301-521.260. BUFFER ZONE MARKERS

N/A

R645-301-521.261. BOUNDARY MARKERS FOR SURFACE

They consist of orange "Tee" posts which are clearly visible from one marker to the next.

R645-301-521.262. BOUNDARY MARKERS FOR SURFACE MINING OPERATIONS

N/A

R645-301-521.270. TOPSOIL MARKERS

See R645-301-521.200.

R645-301-522. COAL RECOVERY

N/A

R645-301-523. MINING METHOD

N/A

R645-301-523.100. SURFACE MINING OPERATIONS WITHIN 500 FEET OF AN UNDERGROUND MINE

N/A

R645-301-523.200. EXCEPTIONS TO SURFACE MINING OPERATIONS WITHIN 500 FEET OF UNDERGROUND WORKINGS

N/A

R645-301-523.210. RESOURCE RECOVERY OF ELIMINATION OF HAZARDS

N/A

R645-301-523.220. APPROVAL BY DIVISION AND MSHA

Appendix B; Appendix O

R645-301-524. BLASTING AND EXPLOSIVES

N/A - There will be no blasting conducted at this site.

R645-301-525. SUBSIDENCE

N/A - There is no mining at this location.

R645-301-526. MINE FACILITIES

See R645-301-520 and Volume II.

R645-301-526.100. MINE STRUCTURES AND FACILITIES

See R645-301-520 and Volume II.

R645-301-526.110. EXISTING STRUCTURES

See R645-301-520 and Volume II.

R645-301-526.111. LOCATION

See R645-301-520 and Volume II.

R645-301-526.112. PLANS OR PHOTOGRAPHS

See R645-301-520.

645-301-526.113. DATES OF CONSTRUCTION OF EXISTING STRUCTURES

See R645-301-520.

R645-301-526.114. MONITORING DATA

N/A

R645-301-526.115. COMPLIANCE PLAN

N/A

R645-301-526.115.1 DESIGN SPECIFICATION

See R645-301-520.

R645-301-526.115.2 CONSTRUCTION SCHEDULE

See R645-301-520.

R645-301-526.115.3 MONITORING SCHEDULES

N/A

R645-301-526.115.4 MINIMIZING RISK OR HARM TO ENVIRONMENT, HEALTH OR PUBLIC SAFETY

N/A

R645-301-526.116. PROTECTION OF PUBLIC AND LANDOWNERS

See R645-301-510 and R645-301-520.

R645-301-526.116.1 MINING OPERATIONS WITHIN 100 FEET OF THE RIGHT-OF-WAY OF A PUBLIC ROAD

N/A

R645-301-526.116.2 RELOCATING A PUBLIC ROAD

N/A

R645-301-526.200. UTILITY INSTALLATION AND SUPPORT FACILITIES

See R645-301-520.

R645-301-526.210. DESCRIPTION

See R645-301-520.

R645-301-526.220. COMPLIANCE REQUIREMENTS

See R645-301-520.

R645-301-526.221. PROTECTION

See R645-301-520.

R645-301-526.222. MINIMIZATION OF ENVIRONMENTAL

IMPACT AND COMPLIANCE WITH EFFLUENT LIMITATIONS

See R645-301-423.200 for details, and R645-301-512.240, R645-301-512.250, R645-301-520, and R-645-301-521 for designs.

R645-301-526.300. WATER POLLUTION CONTROL FACILITIES

See R645-301-520.

R645-301-526.400. AIR POLLUTION CONTROL FACILITIES

Appendix B - Air Quality Permit.

R645-301-527. TRANSPORTATION FACILITIES

Roads

All roads within the permit area are classified as "Primary Roads" in accordance with R614-301-527.100.

See R645-301-512.250 for details.

Railroad

The rail siding roughly bisects the permit area and runs in a north-south direction. The siding is part of a Utah Railroad lease agreement with the B.L.M.

Other Transportation Facilities

Transportation facilities will be designed, constructed, or reconstructed, and maintained to prevent, to the extent possible, damage to fish, wildlife, and related environmental values; and will control to the extent possible, additional contributions outside the permit area. This has been accomplished on the railroad siding through slope stabilization, revegetation, and adequate drainage. Andalex will minimize diminution or degradation of water quality and quantity; control and minimize erosion and siltation; control and minimize pollution; and prevent damage to public or private property to the extent possible. Please note that Andalex's rail siding parallels the existing Utah Railroad mainline and is owned by the Utah Railroad.

R645-301-527.100. ROAD CLASSIFICATION

R645-301-527.110. DESIGNATION OF ALL ROADS

See R645-301-527.

R645-301-527.120. PRIMARY ROADS

See R645-301-527.

R645-301-527.121. USED FOR TRANSPORTING COAL OR SPOIL;

See R645-301-527

R645-301-527.122. FREQUENT USE OR FOR PERIODS IN EXCESS OF 6 MONTHS

See R645-301-527.

R645-301-527.123. RETAINED FOR POSTMINING LAND USE

See R645-301-527.

R645-301-527.130. ANCILLARY ROADS

See R645-301-527.

R645-301-527.200. TRANSPORTATION FACILITIES

See R645-301-527.

R645-301-527.210. DESIGNS AND SPECIFICATIONS

See R645-301-527.

R645-301-527.220. RELOCATION OF A NATURAL DRAINAGEWAY

N/A

R645-301-527.230. MAINTENANCE AND REPAIRS

N/A

R645-301-527.240. GEOTECHNICAL ANALYSIS

N/A

R645-301-527.250. ALTERNATE SPECIFICATIONS OR STEEP CUT SLOPES

N/A

R645-301-528. HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL, AND COAL MINE WASTE

See R645-301-512.230 and R645-301-520.

R645-301-528.100. COAL REMOVAL, HANDLING, STORAGE, CLEANING, AND TRANSPORTATION AREAS AND STRUCTURES

See R645-301-512.230.

R645-301-528.200. OVERBURDEN

N/A

R645-301-528.300. SPOIL, COAL PROCESSING WASTE, MINE DEVELOPMENT WASTE, AND NON-COAL WASTE REMOVAL

Coal Refuse

See R645-301-512.230

Acid and Toxic-Forming Materials **(Also R645-301-711.100 and R645-301-731.300)**

Please refer to Section R645-301-512-230, re: coal processing waste and re: leachate testing for potential acid- and toxic-forming materials. If it is determined through leach testing that the coal processing waste material is acid- or toxic-forming, then the disposal will consist of burial on the west side of Wildcat under four feet of fill material or haulage to another approved coal processing waste disposal area. Disposal will take place within 30 days after the acid or toxic forming materials are identified. The Division will be notified if the coal processing waste is to be moved off-site to another approved disposal area. If acid or toxic forming material is identified it will be buried as described above within 60 days of its discovery. There is no potential for any other acid- or toxic-forming materials within this permit area.

Non-Coal Waste

All combustibles (paper, garbage, paints, wood, etc.) are collected in trash containers and hauled to the local land fill. Non-coal wastes will be placed and stored in a controlled manner in a designated position of the permit area and will comply with R645

regulation. Please refer to Plate 1 for dumpster location.

Contingency Plans to Prevent Sustained Combustion

All which could burn would be small in quantity and consist of normal trash (cardboard, paper, etc.). The quantity would not exceed the volume of a small dumpster. The trash facility is segregated from any buildings or other structures and if ignited accidentally, could be extinguished quickly using either water or fire extinguishers. Spontaneous coal stockpile fires are generally quite small and are extinguished by frontend loaders immediately.

R645-301-528.310. EXCESS SPOIL

N/A

R645-301-528.320. COAL MINE WASTE

See R645-301-528.300.

R645-301-528.321. RETURN OF COAL PROCESSING WASTE TO ABANDONED UNDERGROUND WORKINGS

N/A

R645-301-528.322. REFUSE PILES

See R645-301-512.230 and R645-301-528.300.

R645-301-528.323. BURNING AND BURNED WASTE UTILIZATION

N/A

R645-301-528.323.1 COAL MINE WASTE FIRES

See R645-301-512.230.

R645-301-528.323.2 BURNING OR BURNED COAL MINE WASTE REMOVAL PLAN

See R645-301-512.230.

R645-301-528.330. NON-COAL MINE WASTE

See R645-301-528.300.

R645-301-528.331. DESIGNATION OF NON-COAL MINE WASTE MATERIALS

See R645-301-528.300.

R645-301-528.332. FINAL DISPOSAL OF NON-COAL MINE WASTES

See R645-301-528.300.

R645-301-528.333. RESTRICTIONS ON DISPOSAL ON NON-COAL MINE WASTE MATERIAL

See R645-301-528.300.

R645-301-528.334. HAZARDOUS WASTE MATERIALS

See R645-301-528.300.

R645-301-528.340. UNDERGROUND DEVELOPMENT WASTE

N/A

R645-301-528.350. DISPOSAL REQUIREMENTS

N/A

R645-301-528.400. DAMS, EMBANKMENTS AND OTHER IMPOUNDMENTS

See R645-301-512.240.

R645-301-529. MANAGEMENT OF MINE OPENINGS

N/A

R645-301-529.400. SURFACE MINING OPERATIONS

N/A

R645-301-530. OPERATIONAL DESIGN CRITERIA AND PLANS

All required surface structures for the Wildcat Loadout are presently in place and operating. Any additions, modifications or deletions will be submitted as amendments or revisions to this plan.

R645-301-531. GENERAL

All structures have been properly designed, approved and constructed. Sediment ponds, dams and impoundments are detailed in Section R645-301-512.240. Roads are discussed in Section R645-301-512.250. Refuse disposal is detailed in Section R645-301-512.230 and Appendix O.

R645-301-532. SEDIMENT CONTROL

See Appendix R

R645-301-532.100. MINIMIZING DISTURBANCES

The permit area has been previously impacted by mining-related and processing activities. The present disturbed acreage at this site is 60.94 acres. This site represents a very compact and efficient use of space when compared to similar processing sites in the area. This is also the smallest practicable area of disturbance for the existing operations.

R645-301-532.200. STABILIZING BACKFILLED MATERIAL

Whenever possible, areas such as embankments, topsoil piles and other non-traffic sites, area revegetated to stabilize the site and reduce runoff.

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 except for the last few lifts, to assure stability.

R645-301-533. IMPOUNDMENTS

See Appendix R

R645-301-533.100. STABILITY

See Appendix R

R645-301-533.110. MSHA IMPOUNDMENTS

N/A

R645-301-533.200. FOUNDATION DESIGN

Appendix C

R645-301-533.210. STABILITY

Appendix C

R645-301-533.220. PREPARATION

Appendix C

R645-301-533.300. SLOPE PROTECTION

See R645-301-532.200.

R645-301-533.400. VEGETATION OF EMBANKMENTS

See R645-301-532.200.

R645-301-533.500. SUBMERGED HIGHWALLS

N/A

R645-301-533.600. MSHA IMPOUNDMENTS

N/A

R645-301-533.610. GEOTECHNICAL INVESTIGATIONS

N/A

R645-301-533.611. CERTIFICATION

N/A

R645-301-533.612. DESIGN AND CONSTRUCTION REQUIREMENTS

N/A

R645-301-533.613. OPERATION AND MAINTENANCE

N/A

R645-301-533.614. PLANS FOR REMOVAL

N/A

R645-301-533.620. ENGINEERING DESIGN

See R645-301-512.240 *and Appendix R*

R645-301-533.700. NON-MSHA IMPOUNDMENTS DESIGN REQUIREMENTS

See R645-301-512.240 *and Appendix R*

R645-301-533.710. DESIGN PLAN FOR NON-MSHA IMPOUNDMENTS

See Appendix R

R645-301-533.711. CERTIFICATION

See Plates 3A through #H, and see Appendix R

R645-301-533.712. DESIGN AND CONSTRUCTION REQUIREMENTS

See Appendix R

R645-301-533.713. OPERATION AND MAINTENANCE

See Appendix R

R645-301-533.714. PLANS FOR REMOVAL

See Appendix R

R645-301-534. ROADS

See R645-301-512.250.

R645-301-534.100. DESIGN, USE AND RECLAMATION

See R645-301-512.250.

R645-301-534.110. DAMAGE TO PUBLIC OR PRIVATE PROPERTY

See R645-301-512.250.

R645-301-534.120. NON-ACID OR NONTOXIC FORMING SUBSTANCES IN ROAD SURFACING

No acid or toxic-forming substances will be used for road surfacing.

R645-301-534.130. FACTOR OF SAFETY FOR ROAD EMBANKMENTS

See R645-301-512.250.

R645-301-534.140. REMOVAL AND RECLAMATION OF ROADS

See R645-301-512.250.

R645-301-534.150. VEGETATION/STABILIZATION EXPOSED SURFACES

See R645-301-512.250.

R645-301-534.200. SAFETY AND ENVIRONMENTAL PROTECTION

See R645-301-512.250.

R645-301-534.300. PRIMARY ROADS

See R645-301-512.250.

R645-301-534.310. LOCATION

See R645-301-512.250.

R645-301-534.320. SURFACING

See R645-301-512.250.

R645-301-534.330. MAINTENANCE

See R645-301-512.250.

R645-301-534.340. CULVERT DESIGN

See R645-301-512.240 and R645-301-512.250.

R645-301-535. SPOIL

N/A

R645-301-535.100. DISPOSAL OF EXCESS SPOIL

N/A

R645-301-535.110. MINIMUM FACTOR OF SAFETY

N/A

R645-301-535.111. LOCATION

N/A

R645-301-535.112. FOUNDATION INVESTIGATIONS

N/A

R645-301-535.113. KEYWAY CUTS OR ROCK TOE BUTTRESSES

N/A

R645-301-535.120. EXCESS SPOIL DISPOSED OF IN UNDERGROUND MINE WORKINGS

N/A

R645-301-535.130. PLACEMENT OF EXCESS SPOIL

The only spoil material generated at the Wildcat Loadout is coal processing waste or refuse and sediment cleaned from the ponds. This material is placed in the refuse pile as described in Section R645-301-512.230 and Appendix O.

R645-301-535.140. SURFACE COAL OPERATIONS

N/A

R645-301-536. COAL MINE WASTE

See R645-301-512.230.

R645-301-536.100. DISPOSAL FACILITY

See R645-301-512.230.

R645-301-536.110. STABILITY

See R645-301-512.230.

R645-301-536.120. FOUNDATION DESIGN

See R645-301-512.230.

R645-301-536.200. PLACEMENT

See R645-301-512.230.

R645-301-536.210. CONSTRUCTION

See R645-301-512.230.

R645-301-536.220. PUBLIC HAZARDS

See R645-301-512.230.

R645-301-536.230. PREVENT COMBUSTION

See R645-301-512.230.

R645-301-536.300. COAL MINE WASTE DISPOSED OF IN EXCESS SPOIL FILLS

N/A

R645-301-536.310. REQUIREMENTS

N/A

R645-301-536.320. NONTOXIC AND NON-ACID FORMING

N/A

R645-301-536.330. DESIGN STABILITY

N/A

R645-301-536.400. OTHER REQUIREMENTS

N/A

R645-301-536.410. RESTRICTIONS

N/A

R645-301-536.420. DESIGN PLAN

N/A

R645-301-536.500. DISPOSAL OF COAL MINE WASTE IN SPECIAL AREAS

See R645-301-512.230.

R645-301-536.510. OUTSIDE A PERMIT AREA

N/A

R645-301-536.520. UNDERGROUND DISPOSAL

N/A

R645-301-536.600. UNDERGROUND DEVELOPMENT WASTE

N/A

R645-301-536.700. COAL PROCESSING WASTE

See R645-301-512.230.

R645-301-536.800. COAL PROCESSING WASTE EMBANKMENTS

See R645-301-512.230.

R645-301-536.810. REQUIREMENTS

See R645-301-512.230.

R645-301-536.820. MSHA REQUIREMENTS

See R645-301-512.230 and Appendix O.

R645-301-536.821. BORINGS AND TEST PITS

N/A

R645-301-536.822. FOUNDATION DESIGN

See R645-301-512.230.

R645-301-536.823. SEEP AND SPRING SURVEYS

See R645-301-512.230.

R645-301-536.824. HAZARDS

See R645-301-512.230.

R645-301-536.900. REFUSE PILES

See R645-301-512.230 and Appendix O.

R645-301-537. REGRADED SLOPES

N/A

R645-301-540. RECLAMATION PLAN

R645-301-541. GENERAL (Also R645-301-533)

NOTE: The presently approved reclamation plan for the Wildcat Loadout (as of May 17, 2007) involves two phases. Essentially the plan calls for performing nearly all the reclamation in Phase I, except for leaving in several sediment ponds until re-vegetation standards have been met, then removing the remaining ponds in Phase II, and then seeking bond release after the reclaimed pond areas have met the re-vegetation standards. This is the plan that was

originally adopted when the Mining and Reclamation Plan was initially approved in 1989. Since that time there has been an accumulated history of mine reclamation involving the numerous central Utah coal operations. Based on that intervening experience the prevailing view of reclamation is that Phase II (i.e., retaining the sediment ponds as the final stage of reclamation) is perhaps counter-productive, and that better results are usually obtained by roughening the reclaimed surface to provide post-reclamation sediment control rather than utilizing the left-over ponds. This is especially true in areas such as Wildcat which are essentially flat and erosion is generally not much of a concern, and where there are no significant drainages running through the area to be reclaimed. Therefore, as part of the 2008 Modification Plan, Andalex proposes to modify the reclamation plan by eliminating the Phase II concept. The following description of the reclamation plan is the same as the approved version in every respect other than elimination of the Phase II "retained sed pond" concept.

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

When buildings and final site preparation was completed, the topsoil was revegetated to prevent erosion.

When the project is expired, perhaps in 30 years, extraneous material will be removed. Roads will be regraded and using the most advanced technology at the time, Andalex will re-establish the terrain to as nearly the original as practical.

Reclamation Timetable

Reclamation ~~will be accomplished in two phases. Phase I~~ will commence immediately after the project has expired. ~~Phase I involves the majority of the reclamation steps. It will bring the site to nearly complete with the exception of sedimentation ponds which will be left in place until revegetation has been determined complete. Prior to revegetation being complete, there is a possibility for runoff within the disturbed area to accumulate a sediment load. These ponds left in place will prevent this runoff from leaving the disturbed area. Once the vegetation has been established which will probably take a minimum of two years, Phase II of the reclamation will commence. This phase~~

~~involves the removal of the four sediment ponds which were left, regrading, and revegetating these areas, and finally, Andalex's commitment to monitoring.~~

~~Phase I~~

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

1. 14 x 60 Scale House Trailer
2. Truck Scales
3. Substation
4. Truck Dump (west side)*
5. Crushing Plant (west side)*
6. Radial Stacker (west side)*
7. Reclaim Tunnel (west side)
8. Loadout Conveyor (west side)*
9. Control Building (west side)
10. Truck Dump & Reclaim (2 each)
11. Conveyor T
12. Crusher and Screening Plant
13. Lump Coal Belt
14. Stoker Radial Stacker
15. Conveyor Y, Y-1
16. Main Radial Stacker (2 each)
17. Loadout Reclaim Tunnel, port supports, hoppers
18. Conveyor R
19. Loadout Tower
20. Miscellaneous (Guard Rails, Office, Water Tanks, Motor Control Centers)
21. Powerline
22. 40' x 40' Shop Building and foundation

* Portable

The next step will be to remove any coal remaining on the various storage areas. This will not amount to a large volume of material and it will either be hauled to an approved storage area off-site or it will be disposed of within the loadout permit area by burial. This will include the coal refuse pile currently stored at Wildcat. The refuse pile will be flattened and buried according to the reclamation plan regarding coal mine refuse.

Once the coal has been removed, then the recontouring and

regrading portion will commence. It is anticipated that the structure removal will take approximately one year to complete so at this point, we would be into the reclamation about thirteen months. The first step in the recontouring and regrading would be the removal of the culverts. They have been left in until this point so the disturbed area would drain properly. The recontouring would primarily involve the primary and secondary roads, the loadout pad, and the coal stockpile areas. The undisturbed diversion west of the facility would become permanent at this point and would be capable of passing a 100 year precipitation event. The original natural drainage could not be restored because of the Utah Railroad. This natural drainage has been either blocked or diverted for the last 30 years by predecessors to Andalex.

As part of the 2008 Modification Plan, Andalex Resources acquired aerial photography and digital mapping of the Wildcat Loadout Area. From this photography and mapping Andalex has been able to represent the site with topography on 2' contours. This mapping represents the "as-built" facility as of the spring of 2007. This topographic mapping is more accurate than the original mapping upon which the presently approved MRP is based, which now consists of hand copied ink mylars. The new digital mapping is computer-generated and utilizes X-Y-Z co-ordinates. This electronic mapping is ideal for determining comparative earthwork volumes, since new computer programs are capable of taking existing and proposed contour of the same area and accurately computing cut and fill volumes. This is more accurate than the older methods of determining volumes off of widely-spaced cross sections. Therefore, the 2008 Modification Plan amendment proposes to use this new method of computer-generated volumes for the purpose of determining earthwork volumes for final reclamation. Plate 9 is a revised reclamation map, which shows approximately 80,000 cubic yards of material will have to be moved in the process of recontouring and grading. This would replace the previous Mass Balance Summary with more current numbers reflecting the existing "as-built" site configuration versus the final reclamation configuration.

~~It is estimated by the cross sections that approximately 74,000 cubic yards of material will have to be moved in this process of recontouring and grading (please see Tables II-1 and II-1A re Mass Balance Summary). This part of Phase I will include the removal of all ponds. B and E and establishing new drainages to Ponds A, C, and D. Recontouring will take one month.~~

~~TABLE II-1~~

~~Mass Balance Summary~~

	Cut	Fill
1 + 00	740.8	926.0
0 + 00	1,111.2	
1 + 00	3,333.6	
2 + 00	1,481.6	2,963.2
3 + 00	1,852.0	5,185.6
4 + 00		5,926.4
5 + 00	1,111.2	4,074.4
6 + 00		4,444.8
7 + 00		1,481.6
8 + 00	7,037.6	4,444.8
9 + 00	6,667.2	2,963.2
10 + 00	7,037.6	2,222.4
11 + 00	4,444.8	2,963.2
12 + 00	8,519.2	4,444.8
13 + 00	1,481.6	6,296.8
14 + 00		8,148.8
15 + 00	7,408.0	4,444.8
16 + 00	6,667.2	3,704.0
17 + 00	2,222.4	5,185.6
18 + 00	5,926.4	2,222.4
19 + 00	1,481.6	1,852.0
20 + 00		740.8
21 + 00	5,185.6	
Total	73,709.6	74,635.6

~~Note: Refer to Plate 14 for cross-section locations.~~

TABLE II-1A

Mass Balance
Expanded Wildcat Pad Cross Sections

	Cut	Fill
0+00 - 0+60	0	0
0+80	24.0	0
1+00	22.9	0
1+20	26.1	0
1+40	24.5	0
1+60	58.7	0
1+80 - 3+80	0	0
4+00	0	78.4
4+20	0	250.4
4+40	0	302.3
4+60	181.0	301.3
4+80	157.2	310.1
5+00	139.9	273.5
5+20	132.4	272.7
5+40	135.5	271.7
5+60	153.2	251.3
5+80	169.7	204.9
6+00	171.4	194.7
6+20	173.5	148.0
6+40	185.7	109.3
6+60	227.3	88.4
6+80	234.7	35.0
7+00	211.9	17.0
7+20	0	0
Totals	2,429.6	3,109.0
x 20% swell =	485.9	
	2,915.5	

Note: Refer to Plate 14 for cross-section locations.

At the request of the Division, no extraordinary compaction will be applied to the last few lifts during the recontouring/grading, to provide a relatively loose rooting zone of four feet. This loose application of fill will eliminate the need for ripping prior to topsoil placement. During this operation, if it is determined that additional sediment control measures are needed for the diversions leading to the four ponds, they will be put in at this time. These measures might include rock check dams or straw dikes.

The next steps ~~in Phase I~~ will not take place until the fall of whatever year we are in at this point. So far the project has taken 14 to 15 months. The next two steps in the process are topsoil redistribution, where additional substitute will be hauled in if necessary, and revegetation. Once the topsoil is spread, the area will be roughened by gouging, and the area will be hydroseeded and hydromulched. The entire revegetation procedure is described in this chapter.

Finally ~~in Phase I~~, monitoring will commence. Observations of revegetation success and slope stability will be observed. If any part of this is unsuccessful, corrective measures will be taken.

Since Andalex estimates a minimum of two years before vegetation has taken hold to prevent erosion, then the entire ~~Phase I~~ project will take at least 3-1/2 years.

~~Phase II~~

~~Phase II of the reclamation will commence as soon as the monitoring of Phase I allows.~~

~~All that is left at this point is the removal (recontouring) of Ponds A, C, D, and F and the removal of the field fence surrounding the permit area. Once the areas have been graded, they will be prepared with loose filling of the upper lifts, (as described in Phase I above), prior to topsoil redistribution. At this point, if it is not already the fall season, Andalex will wait before redistributing the topsoil and revegetating. The same methods for revegetation will be used as in the Phase I reclamation.~~

Monitoring will then continue until the release of the bond.

Please note that earthwork will be done ~~in both Phase I and II~~ as much as possible during the dry seasons to avoid unnecessary erosion to the regraded areas. If dust becomes a

problem, water will be used to control it.

Reclamation Cost and Bonding

Bond information and detailed costs are provided in Appendix B.

R645-301-541.100. CESSATION OF MINING OPERATIONS

See R645-301-541.

R645-301-541.200. REMOVAL OF FACILITIES

See R645-301-541.

R645-301-541.300. POSTMINING FACILITIES AND MONITORING

See R645-301-541.

R645-301-541.400. COMPLIANCE REQUIREMENTS FOR RECLAMATION

See R645-301-240.

R645-301-542. NARRATIVES, MAPS AND PLANS

See R645-301-510.

R645-301-542.100. TIMETABLE

See R645-301-240 and R645-301-541.

R645-301-542.200. BACKFILLING AND GRADING PLAN

See R645-301-532.200.

R645-301-542.300. FINAL SURFACE CONFIGURATION MAPS

Plates 8 & 9.

R645-301-542.310. CERTIFICATION REQUIREMENTS

See R645-301-510 and Volume II.

R645-301-542.320. PERMANENT FACILITIES

The only permanent facilities to remain at the Wildcat Loadout after reclamation will be the ~~Undisturbed Diversion (UD-1),~~ Permanent Impoundment and *Depression Area at* the railroad. The ~~undisturbed diversion and~~ permanent impoundment is being left to provide drainage control for a drainage that was blocked off over 30 years ago by the railroad *creating the Depression Area*.

These structures are sized to carry runoff from a 100 year - ~~24~~ *6* hour storm, as detailed in *Appendix R.*

R645-301-542.400. FINAL ABANDONMENT OR BOND RELEASE

Reclamation Cost and Bonding

Cost of Reclamation

Introduction

The major elements in the reclamation of Wildcat will be the dismantling and removal of the large structures. This will be accomplished primarily with manpower and some large equipment including cranes. The major structures to be removed are the loadout tower, the two loadout conveyors, the reclaim tunnel, the two radial stackers, the yard conveyor, the crushing and screening plant, and the truck dump. Also, the coal refuse pile will be flattened and covered with suitable fill material.

Andalex forsees that the removal of these structures will be done in conjunction with a salvaging project as these structures and equipment will retain a great deal of value after they are dismantled. Therefore, the cost of removing these structures may be largely absorbed by the person or persons participating in the salvage operation. However, this savings was not considered in the bond estimate.

Bond or Surety Arrangement

Andalex has procured a reclamation bond (Irrevocable Letter of Credit) in the amount of $651,000, as established by the Division. (See Appendix B) This bond is based on detailed calculations provided by the Division. A copy of the calculations are also included in Appendix B.

Wildcat Loadout Facility

Restoration to the pre-mining land use will require:

~~PHASE I:~~

A. Removal of Structures:
   1. 14 x 60 Scale House Trailer and Truck Scales
   2. Substation
   3. Truck Dump (west side)
   4. Crushing Plant (west side)*
   5. Radial Stacker (west side)*
   6. Reclaim Tunnel (west side)
   7. Loadout Conveyor (west side)*
   8. Control Building (west side)
   9. Truck Dump & Reclaim
   10. Conveyor T
   11. Crusher and Screening Plant
   12. Lump Coal Belt
   13. Stoker Radial Stacker
   14. Conveyor Y
   15. Main Radial Stacker
   16. Loadout Reclaim Tunnel, port supports,
   17. Conveyor R
   18. Loadout Tower
   19. Miscellaneous (Guard Rails, Office, Water and Mag. Tanks, Motor Control Centers)
   20. Powerline
   21. 40" x 40" Shop

   Total

   * Portable

B. Cleanup Coal Piles:
   1. Radial Stacker
   2. Stoker, Lump
   3. Mine Run and Lump
   4. West Side Stoker
   5. West Side Storage Pad

C. Recontouring and Regrading:
   (including covering of coal refuse storage pile)
   1. Culvert Removal
   2. *Removal of sediment ponds*
   3. Move ~~77,000~~ *80,000* yds.^{3}

D. Compaction and Scarification:

E. Topsoil Redistribution:

F. Revegetation:

G. Monitoring Costs:
Years 1, 2, 3, 5, 9, and 10
Water
Revegetation
Erosion

~~Phase II:~~

~~A. Recontouring, Grading, Compaction, Topsoil Redistribution, Revegetation~~

~~1. Ponds A, C, D, and F~~

~~B. Monitoring Costs:~~
~~Years 9 and 10~~
~~Revegetation~~
~~Erosion~~

Productivity will be sampled only during years 9 and 10. The reference area will be sampled during years 9 and 10.

Casing and Sealing of Drill Holes

All drill holes within the permit area have been sealed with cement from bottom to top (eight test holes referred to in Appendix C). No new holes will be drilled.

R645-301-542.500. IMPOUNDMENTS AND EMBANKMENTS

See R645-301-512.240, R645-301-541, *and Appendix R*

R645-301-542.600. ROADS

All roads will be removed and reclaimed per Section R645-301-541.

R645-301-542.610. CLOSURE

See R645-301-541.

R645-301-542.620. REMOVAL OF BRIDGES AND CULVERTS

See R645-301-541.

R645-301-542.630. TOPSOIL REPLACEMENT AND REVEGATATION

See R645-301-541.

R645-301-542.640. REMOVAL OF ROAD SURFACING MATERIALS

See R645-301-541

R645-301-542.700. FINAL ABANDONMENT OF MINE OPENINGS AND DISPOSAL AREAS

Plates 8 & 9.

R645-301-542.710. DESCRIPTION

N/A

R645-301-542.720. DISPOSAL OF EXCESS SPOIL

N/A

R645-301-542.730. DISPOSAL OF COAL MINE WASTE

See R645-301-512.230.

R645-301-542.740. DISPOSAL OF NON-COAL MINE WASTES

See R645-301-541.

R645-301-542.741. PLACEMENT AND STORAGE

See R645-301-541.

R645-301-542.742. FINAL DISPOSAL

See R645-301-541.

R645-301-542.800. RECLAMATION COST ESTIMATE

See R645-301-240, R645-301-542.400 and Appendix B.

R645-301-550. RECLAMATION DESIGN CRITERIA AND PLANS

See R645-301-240.

R645-301-551. CASING AND SEALING OF UNDERGROUND OPENINGS

N/A

R645-301-552. PERMANENT FEATURES

See Section R645-301-542.320.

R645-301-552.100. SMALL DEPRESSIONS

See Section R645-301-542.320.

R645-301-552.200. PERMANENT IMPOUNDMENTS

See Sections R645-301-512.240, R645-301-542.320 *and Appendix R*

R645-301-553. BACKFILLING AND GRADING

See Section R645-301-541.

R645-301-553.100. DISTURBED AREAS

See Section R645-301-541.

R645-301-553.110. AOC REQUIREMENTS

See Section R645-301-541.

R645-301-553.120. HIGHWALL AND SPOILS PILE ELIMINATION

See Section R645-301-541.

R645-301-553.130. SLOPE PROTECTION AND STABILITY

See Section R645-301-541.

R645-301-553.140. EROSION AND WATER POLLUTION

See Section R645-301-541.

R645-301-553.150. SUPPORT POSTMINING LAND USE

Upon completion of Andalex Resources' mining operation, the land will continue to be used for grazing and hunting. The limited

resources, both physical and scenic, will dictate no future change in the land status. The nature of an underground mine of this size requires minimal surface disturbance. All disturbed areas shall be restored in a timely manner to conditions that are capable of supporting the uses which they were capable of supporting before any mining including high priority wildlife habitat. Andalex is not proposing an alternate post-mining land use. Andalex is not requesting an approval for an alternate post-mining land use. The anticipated post-mining land use is likely to be achieved and does not present any actual or probable hazard to public health or safety or threat of water diminution or pollution. The post-mining land use is practical and can be implemented immediately following reclamation and will not result in any violation of federal, state, or local law.

R645-301-553.200. SPOIL AND WASTE

N/A

R645-301-553.210. REQUIREMENTS FOR DISPOSAL

N/A

R645-301-553.220. SPOIL PLACEMENT OUTSIDE MINED-OUT AREA

N/A

R645-301-553.221. CLEARING AND GRUBBING

N/A

R645-301-553.222. TOPSOIL REMOVAL AND STORAGE

N/A

R645-301-553.223. BACKFILLING AND GRADING

N/A

R645-301-553.230. FINAL SURFACE GRADING

See R645-301-541.

R645-301-553.240. FINAL CONFIGURATION

Plates 8 & 9.

R645-301-553.250. REFUSE PILES

See section R645-301-512.230; Plates 8 & 9.

R645-301-553.251. FINAL CONFIGURATION

See section R645-301-512.230 and Appendix O.

R645-301-553.252. COVER REQUIREMENTS

See section R645-301-512.230 and Appendix O.

R645-301-553.260. DISPOSAL OF COAL PROCESSING WASTES IN MINED-OUT SURFACE AREAS

N/A

R645-301-553.300. RESTRICTIONS AND REQUIREMENTS

N/A

R645-301-553.400. CUT-AND-FILL TERRACES

N/A

R645-301-553.410. COMPATIBILITY

N/A

R645-301-553.420. SPECIALIZED FACILITIES FOR IMPLEMENTING POSTMINING LAND USE

N/A

R645-301-553.500. PREVIOUSLY MINED AREAS

N/A

R645-301-553.510. RE-MINING AREAS CONTAINING HIGHWALLS

N/A

R645-301-553.520. HIGHWALL ELIMINATION

N/A

R645-301-553.530. REMAINING HIGHWALLS

N/A

R645-301-553.540. SPOIL ON OUTSLOPES

N/A

R645-301-553.600. APPROXIMATE ORIGINAL CONTOUR

See R645-301-523.200.

R645-301-553.610. HIGHWALL VARIANCE REQUIREMENTS

N/A

R645-301-553.611. SPOIL AND BACKFILL

N/A

R645-301-553.612. AVAILABLE SPOIL

N/A

R645-301-553.650. HIGHWALL MANAGEMENT

See R645-301-511.100.

R645-301-553.650.100 REMAINING HIGHWALL - SIZE

N/A

R645-301-553.650.200 REMAINING HIGHWALL - APPEARANCE

N/A

R645-301-553.650.300 REMAINING HIGHWALL - MODIFICATION

N/A

R645-301-553.650.400 REMAINING HIGHWALL - LAND USE

N/A

R645-301-553.650.500 REMAINING HIGHWALL -COMPATIBILITY

N/A

R645-301-553.700. BACKFILLING AND GRADING: THIN OVERBURDEN

N/A

R645-301-553.710. AVAILABLE SPOIL MATERIALS

N/A

R645-301-553.720. REQUIREMENTS

N/A

R645-301-553.800. BACKFILLING AND GRADING: THICK OVERBURDEN

N/A

R645-301-553.810. FINAL GRADING

N/A

R645-301-553.820. REQUIREMENTS

N/A

R645-301-553.830. EXCESS SPOIL

N/A

R645-301-553.900. SETTLED AND REVEGETATED FILLS

N/A

R645-301-560. PERFORMANCE STANDARDS

See R645-301-510 and R645-301-541.

ANDALEX RESOURCES, INC.

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 6, GEOLOGY

CHAPTER 6

TABLE OF CONTENTS

R645-301-600.	GEOLOGY	6-1
R645-301-610.	INTRODUCTION	6-1
R645-301-611.	GENERAL REQUIREMENTS	6-1
R645-301-612.	CROSS SECTION, MAPS AND PLANS	6-4
R645-301-620.	ENVIRONMENTAL DESCRIPTION	6-4
R645-301-621.	GENERAL REQUIREMENTS	6-4
R645-301-622.	CROSS SECTIONS, MAPS AND PLANS	6-4
R645-301-623.	GEOLOGIC INFORMATION	6-5
R645-301-624.	GEOLOGIC INFORMATION	6-5
R645-301-625.	ADDITIONAL INFORMATION	6-7
R645-301-626.	WAIVER FROM COLLECTION AND ANALYSIS	6-7
R645-301-627.	OVERBURDEN	6-7
R645-301-630.	OPERATION PLAN	6-7
R645-301-631.	CASING AND SEALING OF EXPLORATION HOLES AND BOREHOLES	6-7
R645-301-632.	SUBSIDENCE MONITORING	6-8
R645-301-640.	PERFORMANCE STANDARDS	6-8
R645-301-641.	ALL EXPLORATION HOLES AND BOREHOLES	6-8
R645-301-642.	MONUMENTS AND SURFACE MARKERS	6-8

CHAPTER 6, GEOLOGY

NOTE TO REVIEWERS: The Wildcat MRP was recently re-formatted to the newer R645 regulations. This reformatted MRP was recently approved and incorporated on May 17, 2006. The current amendment is referred to as the 2008 Modification Plan and consists of three components, namely; 1) addressing Division Order DO-04 regarding wind-blown fines, 2) expanding the primary coal storage pad by about 3.5 acres, and 3) provide for a new material storage area of about 6 acres located on the west side of the facility.

Because the Wildcat MRP was recently reformatted and approved, every effort has been made in this amendment to minimize text changes, as pertains to responses to specific regulations, except where necessary to avoid inconsistencies and contradictions, and to make the response germane to the inclusion of the 2008 Modification Plan. Where appropriate, response to individual regulations regarding the proposed 2008 Modification Plan amendment includes reference to Appendix S. This appendix contains a detailed description of the amendment and is presented in a narrative that integrates the various components which are normally addressed in the separate chapters. Within the chapters themselves, all new discussion relevant to the 2008 Modification Plan amendment is presented in italics to easily differentiate it from the previously approved and reformatted text. The submittal also utilizes the standard "redline/strike-out" to aid in the review.

R645-301-600. GEOLOGY

R645-301-610. INTRODUCTION

R645-301-611. GENERAL REQUIREMENTS

R645-301-611.100. GEOLOGY WITHIN AND ADJACENT TO THE PERMIT AREA

Introduction

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

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

Spring Canyon are the major area drainages.

Geologic Setting (Stratigraphy and Structure)

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

The oldest unit of the Mesa Verde Group is the Star Point Sandstone. It lacks coal and consists of three sandstone tongues. The beds of sandstone range in thickness from one to ten feet in most parts. The Mesa Verde Group immediately overlies the Mancos Shale. Overlying the starpoint sandstone, is the Blackhawk formation, also of the Mesa Verde Group. The major coal seams of the entire region lie within the Blackhawk formation. The Blackhawk formation consists of cliffy sandstone beds and lagoonal sediments.

Immediately, but disconformably overlying the Blackhawk formation, is the Castlegate sandstone, also of the Mesa Verde Group. It is a single bed of massive sandstone about 450 to 500 feet thick. Above the Castlegate sandstone are 900 to 1,000 feet of sandstone, shale, and sandy shale beds, a unit called the Price River Formation which is also a member of the Mesa Verde Group.

Structure

In the Wasatch Plateau, the cliff fronts roughly parallel the strike of the beds with gentle dips to the northwest. The Mancos Shale in this area exhibits the same trends.

The Wasatch Plateau contains three complex north trending fault zones of large lateral extent. This has a tendency to disrupt mining activities on the Wasatch Plateau but will have no impact on the Wildcat Loadout Facility as this is strictly a surface facility.

History of Mining

Mining and its' related activities have been the main industry in this region for many years.

Coal was discovered in the Wasatch Plateau as early as 1874. Coal exploration eventually spread to the Book Cliffs. As early as 1889, mines started operating in the area. The Castlegate and Sunnyside area was developed first. As the coal way usually discovered away from settled areas, the companies built houses for their employees.

There was increased production until 1920, thereafter declining

during the 1920's and 1930's. However, as a result of the second World War, production bounced back to the 1920 levels and this production increase went up until 1957 when production once again declined.

Up to 75 percent of Utah's annual coal production has come from mines in the Book Cliffs.

Coal already extracted from the coal measures of the area is well over 200 million tons. Much coal remains and many mines are presently operating in the area.

Historically, coal loading activities had been the sole use for this permit area, even prior to being leased to Andalex Resources.

Geologic and Tectonic History

During the Triassic and Jurassic periods, the area of the Book Cliffs was relatively stable, but gradually subsided and received sediments. The area, assumed to have been a relatively flat lowland, was occasionally covered by a shallow sea of short geologic duration. A thick red bed sequence suggests tropical conditions. During the Triassic times, the sediments probably came from all directions but, during the Jurassic time, the major source areas were mainly to the south and west.

During the early Cretaceous, a trough developed in the Colorado Rockies and the sea invaded the area. Gradually, the sea crept westward as the trough continued to subside, reaching the east edge of the Colorado Plateau by the early part of the Upper Cretaceous.

Unconformities and thinning of various members indicate that volcanic activity to the west caused sediments to fill the basin faster than it could subside, causing the shoreline to be pushed eastward. When hills developed as a result of this activity, the incoming sediments diminished, causing the sea to move westward once more. With each pulse, the boundaries of the depositional environments moved eastward and then returned westward. This was the period the sandstone tongues of the Mesa Verde group which project into the Mancos, were deposited. This is known as the Star Point Sandstone.

Despite the fact that the sea retreated, the area continued to receive sediments under continual conditions, a condition known to have lasted well into the Eocene time. The area began to rise in full earnest during Oligocene time. Erosion attacked the previously deposited formations, and in consequence, forming the present mountain ranges and cliffs.

Geologic Hazard

Although there are faults present in the area, they will have no impact on the Wildcat Loadout Surface Facility.

Detailed Description of Strata to be Disturbed by Surface Operations

Identification of Strata

The strata disturbed by surface operations consists of a slightly sandy shale. Surface disturbance was primarily in loose sediments and coal dumps.

R645-301-611.200. PROPOSED OPERATIONS

See R645-301-551. and R645-301-529.100.

R645-301-612. CROSS SECTION, MAPS AND PLANS

See R645-301-510.

R645-301-620. ENVIRONMENTAL DESCRIPTION

See R645-301-510.

R645-301-621. GENERAL REQUIREMENTS

See R645-301-510.

R645-301-622. CROSS SECTIONS, MAPS AND PLANS

Plate 12

R645-301-622.100. TEST BORINGS AND CORE SAMPLINGS

Appendix C

R645-301-622.200. COAL SEAMS AND BURDEN

N/A

R645-301-622.300. COAL OUTCROPS

N/A

R645-301-622.400. GAS AND OIL WELLS

There are no oil or gas wells within the permit area. In 2002, a drill pad was constructed by Conoco Phillips Company for a gas well

adjacent to the east permit boundary, and actually encroached on the permit as shown on Plates 1 and 2; however, to date, no drilling has been done and future drilling will not occur within the permit boundary.

R645-301-623. GEOLOGIC INFORMATION

See R645-301-611.100.

R645-301-623.100. POTENTIALLY ACID OR TOXIC FORMING STRATA

Appendix C

R645-301-623.200. RECLAMATION REQUIREMENTS

See R645-301-240.

R645-301-623.300. SUBSIDENCE CONTROL PLAN

N/A

R645-301-624. GEOLOGIC INFORMATION

See R645-301-611.100.

R645-301-624.100. DESCRIPTION

See R645-301-611.100.

R645-301-624.110. CROSS SECTIONS, MAPS AND PLANS

See R645-301-510.

R645-301-624.120. OTHER INFORMATION

Alternative Water Supply Information

The Wildcat activities will not result in any contamination, diminution, or interruption of any surface water sources within the proposed permit area. Naturally drainages have been diverted around the disturbed area. It should be noted that these are ephemeral drainages. As no springs or seeps exist on or near the permit area, there are no groundwater sources to be disrupted. Andalex has water rights on the seep in Garley Creek and upon completion of activities this water right could be transferred for another use. To date, Andalex has not developed this water. If developed, it will be used for dust suppression.

R645-301-624.130. GEOLOGIC LITERATURE AND PRACTICES

See R645-301-611.100.

R645-301-624.200. SAMPLING AND ANALYSIS

Appendix C

R645-301-624.210. LOGS

Appendix C

R645-301-624.220. CHEMICAL ANALYSES

Appendix C

R645-301-624.230. ACID OR TOXIC FORMING MATERIALS

Appendix C, R645-301-513.300.

R645-301-624.300. TEST BORINGS AND DRILL CORES

Appendix C

R645-301-624.310. LOGS

Appendix C

R645-301-624.320. ACID OR TOXIC FORMING MATERIALS

Appendix C, R645-301-513.300.

R645-301-624.330. CHEMICAL ANALYSES

Appendix C

R645-301-624.340. ROOF AND FLOOR MATERIALS

N/A

R645-301-625. ADDITIONAL INFORMATION

Appendix C

R645-301-626. WAIVER FROM COLLECTION AND ANALYSIS

N/A

R645-301-627. OVERBURDEN

N/A

R645-301-630. OPERATION PLAN

See R645-301-511.100.

R645-301-631. CASING AND SEALING OF EXPLORATION HOLES AND BOREHOLES

See R645-301-551.

R645-301-631.100. TEMPORARY CASING AND SEALING OF DRILLED HOLES

N/A

R645-301-631.200. PERMANENT CASING AND SEALING OF EXPLORATION HOLES AND BOREHOLES

See R645-301-551.

R645-301-632. SUBSIDENCE MONITORING

N/A

R645-301-632.100. DEGREE OF SUBSIDENCE

N/A

R645-301-632.200. MONITORING LOCATIONS

N/A

R645-301-640. PERFORMANCE STANDARDS

See R645-301-551 and R645-301-529.100.

R645-301-641. ALL EXPLORATION HOLES AND BOREHOLES

See R645-301-551 and R645-301-529.100.

R645-301-642. MONUMENTS AND SURFACE MARKERS

N/A

ANDALEX RESOURCES, INC.

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 7, HYDROLOGY

CHAPTER 7

TABLE OF CONTENTS

R645-301-700.	HYDROLOGY	7-1
R645-301-710.	INTRODUCTION	7-1
R645-301-711.	GENERAL REQUIREMENTS	7-2
R645-301-712.	CERTIFICATION	7-8
R645-301-713.	INSPECTION	7-9
R645-301-720.	ENVIRONMENTAL DESCRIPTION	7-9
R645-301-721.	GENERAL REQUIREMENTS	7-9
R645-301-722.	CROSS SECTIONS AND MAPS	7-9
R645-301-723.	SAMPLING AND ANALYSIS	7-9
R645-301-724.	BASELINE INFORMATION	7-15
R645-301-725.	BASELINE CUMULATIVE IMPACT AREA INFORMATION	7-23
R645-301-726.	MODELING	7-24
R645-301-727.	ALTERNATIVE WATER SOURCE INFORMATION	7-24
R645-301-728.	PROBABLE HYDROLOGIC CONSEQUENCES (PHC) DETERMINATION	7-24
R645-301-729.	CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)	7-25
R645-301-730.	OPERATION PLAN	7-26
R645-301-731.	GENERAL REQUIREMENTS	7-26
R645-301-732.	SEDIMENT CONTROL MEASURES	7-32
R645-301-733.	IMPOUNDMENTS	7-33
R645-301-734.	DISCHARGE STRUCTURES	7-37
R645-301-735.	DISPOSAL OF EXCESS SPOIL	7-37
R645-301-736.	COAL MINE WASTE	7-37

R645-301-737.	NON-COAL MINE WASTE	7-38
R645-301-738.	TEMPORARY CASING AND SEALING OF WELLS	7-38
R645-301-740.	DESIGN CRITERIA AND PLANS	7-38
R645-301-741.	GENERAL REQUIREMENTS	7-38
R645-301-742.	SEDIMENT CONTROL MEASURES	7-38
R645-301-743.	IMPOUNDMENTS	7-45
R645-301-744.	DISCHARGE STRUCTURES	7-47
R645-301-745.	DISPOSAL OF EXCESS SPOIL	7-47
R645-301-746.	COAL MINE WASTE	7-49
R645-301-747.	DISPOSAL OF NON-COAL MINE WASTE	7-51
R645-301-748.	CASING AND SEALING OF WELLS	7-51
R645-301-750.	PERFORMANCE STANDARDS	7-51
R645-301-751.	WATER QUALITY STANDARDS AND EFFLUENT LIMITATIONS	7-52
R645-301-752.	SEDIMENT CONTROL MEASURES	7-52
R645-301-753.	IMPOUNDMENTS AND DISCHARGE STRUCTURES	7-53
R645-301-754.	DISPOSAL OF EXCESS SPOIL, COAL MINE WASTE AND NON-COAL MINE WASTE	7-53
R645-301-755.	CASING AND SEALING OF WELLS	7-53
R645-301-760.	RECLAMATION	7-53
R645-301-761.	GENERAL REQUIREMENTS	7-53
R645-301-762.	ROADS	7-53
R645-301-763.	SILTATION STRUCTURES	7-53
R645-301-764.	STRUCTURE REMOVAL	7-54
R645-301-765.	PERMANENT CASING AND SEALING OF WELLS	7-54

CHAPTER 7, HYDOLOGY

NOTE TO REVIEWERS: The Wildcat MRP was recently re-formatted to the newer R645 regulations. This reformatted MRP was recently approved and incorporated on May 17, 2006. The current amendment is referred to as the 2008 Modification Plan and consists of three components, namely; 1) addressing Division Order DO-04 regarding wind-blown fines, 2) expanding the primary coal storage pad by about 3.5 acres, and 3) provide for a new material storage area of about 6 acres located on the west side of the facility.

Because the Wildcat MRP was recently reformatted and approved, every effort has been made in this amendment to minimize text changes, as pertains to responses to specific regulations, except where necessary to avoid inconsistencies and contradictions, and to make the response germane to the inclusion of the 2008 Modification Plan. Where appropriate, response to individual regulations regarding the proposed 2008 Modification Plan amendment includes reference to Appendix S. This appendix contains a detailed description of the amendment and is presented in a narrative that integrates the various components which are normally addressed in the separate chapters. Within the chapters themselves, all new discussion relevant to the 2008 Modification Plan amendment is presented in italics to easily differentiate it from the previously approved and reformatted text. The submittal also utilizes the standard "redline/strike-out" to aid in the review.

R645-301-700. HYDROLOGY

R645-301-710. INTRODUCTION

It should be noted that the entire sedimentation and control plan, including impoundments, diversions and *reclamation hydrology* are discussed in *Appendix R, Sedimentation and Drainage Control Plan.* ~~the Engineering Chapter 5 under Section R645-301-512.240. To prevent duplication and possible omissions during amendments, references are made from this chapter to that section wherever applicable.~~

~~Section R645-301-512.240 addresses all, or relevant portions of, the following main sections in Chapter 7.~~

~~R645-301-722, 723, 724, 725, 728, 731, 732, 733, 734, 740, 741, 742, 743, 744, 752, 753, 763 and 764~~

R645-301-711. GENERAL REQUIREMENTS

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

R645-301-711.100. EXISTING HYDROLOGIC RESOURCES

Existing Groundwater Resources

Regional Groundwater Hydrology

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

The principal water bearing formations of the Wasatch Plateau are the sandstone units of the Mancos Shale Group. These include the Emery and Ferron Sandstones.[1] These sandstone units occur in the southern part of Emery County and probably do not extend into the Gordon Creek area.[2] The basal unit of the Mesa Verde Group, the Star Point Sandstone, is probably the principal aquifer in the Gordon Creek area; however, this unit is stratigraphically located several hundred feet in elevation higher than the loadout facility. Price and Arnow (1979) do not identify the Gordon Creek area as a region for potential large scale groundwater development.

The Mancos formation consists of approximately 5,000 feet of dark blue-gray shale with several prominent members. The loadout facility is located in the Upper or Masuk Shale Member of the Mancos. This formation is characterized as a yellow to blue-gray sandy shale and is not regarded as an aquifer (please see Figure VII-1). Little data is available on the groundwater potential of the shales in the Lower Gordon Creek Area, since they are located below the minable coal seams and above the river bottoms, and thus

---

[1]Price and Arnow, 1974

[2]Fisher, 1960

have not been studied specifically. The extremely low groundwater potential of the general area, however, is supported by a field reconnaissance of the surrounding area. The drainages within a 1/2 mile radius of the loadout site are all ephemeral and no springs or seeps are known to exist within this distance, indicating a complete lack of groundwater in the shale unit in this area. The nearest water to be found in the general area is in a small seep in Garley Canyon about 1/2 mile to the southwest, and the Gordon Creek drainage located some 1-1/2 miles to the south. The flows are generally intermittent and are characterized by poor quality and a high salt content, typical of low volume flow in the Mancos Shale. Some groundwater has been measured in the Lower Mancos Shale units in Castle Valley, i.e., C.V. Spur. These areas are below the water tables of the Price River and various canals, and are likely fed by those units. An examination of available data in the MRP show groundwater quality in these areas is inconsistent and highly alkaline, commonly containing total dissolved solids in excess of 10,000 mg/l.

The spring/seep in Garley Canyon is located in the NW 1/4 NW 1/4 of Section 4, Township 13 South, Range 9 East, S.L.B.M., approximately 3/4 miles southwest of the loadout facility, as shown on Plate 15. The spring outcrops at an elevation of approximately 6,155.0 feet, in the main drainage of Garley Canyon, near the Utah Railroad Crossing. The spring is located in the Quarternary Alluvium; however, it is likely the recharge is from the alluvial terraces to the northwest, with the water surfacing near the point where the alluvium meets the more impermeable Mancos Shale below. The flow from the spring is extremely low - approximately 5 g.p.m. - and the quality is typically poor for water in this area. Andalex has filed for the water rights to this spring, and a copy of the certificate of water right is included as Appendix G. Also included in the appendix is a water sample analysis of the spring. The spring is presently used only for occasional wildlife and stock watering; however, this use is highly limited since the spring has not been developed for any specific purpose. Future use of the spring may include industrial water if Andalex decided to develop and utilize the water for its loadout operation.

Mine Plan Area Groundwater Hydrology

The processing/loadout facility is located on a low slope within the Masuk Shale Member of the Mancos Formation. Ridges adjacent to the area are capped by a loose deposit of boulders and gravels derived from the sandstones and limestones of the eroded plateaus. These gravel deposits are believed to be late tertiary or early

quaternary in age.[3] Eight holes were drilled on site for a geotechnical analysis of soil foundation characteristics. Locations of the holes are shown on Figure No. 1 in Appendix C. The holes reached depths of 45', and show the top 15' to 20' to be a clayey silt and a gray shale below that depth. None of the holes intercepted any groundwater. Two additional holes were drilled up to 60' to set piling below the loadout, and no groundwater was intercepted in this drilling.

At the recommendation of the foundation consultant, Rollins, Brown, and Gunnell, the two deeper holes were left open to be monitored for groundwater infiltration. The 2-60' deep holes were left open for a period of two months and checked on a weekly basis. After two months, no groundwater had been detected in either hole and it was therefore concluded that groundwater did not exist in the area of drilling. No other data is available.

The drainages within, and adjacent to the permit area, are all ephemeral and there are no springs or seeps in this area.

There are no groundwater resources present on or adjacent to the permit area. This conclusion is based on the following:

1. Regional groundwater evaluations show minor perched aquifers in the upper (Mesa Verde Group) formations and minor groundwater occurrances in the Mancos in the valley floor below the river and canal water tables.

   The permit area lies within the Masuk Shale Member of the Mancos Formation, which is in between the recorded groundwater areas. This shale member is not regarded as a regional or localized aq uifer;

2. The drainages within and adjacent to the permit area are all ephemeral. The presence of groundwater would likely be shown by springs, seeps, or at least intermittent flows in some of the deeply eroded natural drainages;

3. There are no springs or seeps known to exist within or adjacent to the permit area;

4. On-site drilling reached depths of 60' and encountered absolutely no groundwater.

Effects of Operations on Groundwater

---

[3]Spieker, 1931

Regional and on-site studies, reconnaissance, and drilling indicate a complete lack of groundwater in the permit area and surrounding area. If groundwater does exist below the permit area, it is likely several hundred feet down, near the level of the valley floor. Since the operations at this site are confined to the immediate surface and since no mining extraction or subsidence will occur here, there will be no effect of the operation on groundwater.

Mitigation and Control Plans

Since there are no groundwater resources or impacts expected at this site, there will be no need for mitigation and control plans for groundwater protection. The operation will, however, be conducted in a sound and environmentally conscious manner. There will be mitigation and control plans for surface water and these plans will ensure protection of surface water which may become recharge for groundwater sources elsewhere.

Groundwater Monitoring

Since groundwater does not occur on or adjacent to the permit area, there is no baseline water quality or quantity information available, other than the drilling information on the site that confirmed no groundwater is present. As a result, no groundwater monitoring program is proposed for this operation.

Andalex Resources, Inc. will, however, perform a leachate test on the coal and reject materials stored on site as requested by the Division. Andalex will gather a special sample of the coal processing waste material for a special one time characterization. Andalex proposes to take this sample at approximately the center of the pile at a depth of approximately one foot. The sample will be a grab type sample unless the size of the specimen recovered is too large. If so, Andalex will form a composite sample from four separate locations in a radius approximately 50 feet from the center of the pile. Only one sample will be required from this depth because in an ordinary coal processing waste year, only one two foot lift is added to the reject pile. As soon as this procedure has been approved by the Division, it will be implemented. The test will consist of saturating a representative sample of material with water for a period of 24 hours and then extracting a fluid sample. The leachate will then be analyzed for the normal surface water baseline parameters. This information will then be incorporated into the probable hydrologic consequences document for the facility.

The material to be leached will also be tested for acid- or toxic-

forming potential at this time. The analysis will include the following parameters: pH, Ec, SAR, Se, B, Acid-Base Potential, % Organic Carbon, Saturation Percent, and Texture. If toxic- or acid-forming materials are found to occur, a plan will be developed to ensure that drainage from these materials will not be detrimental to vegetation or adversely affect surface waters.

The above described leachate analysis was conducted in 1994 and results were submitted to the Division in the Annual Report for that year. Additional sampling of the refuse material was also conducted in 2004 and analyzed for acid and toxic properties. The results of these tests are included in Appendix D.

Surface Water Hydrology

This section will provide a review of the surface water hydrology relevant to the Andalex Wildcat Loadout Facility, as well as methods and designs to control surface waters within compliance of DOGM regulations.

Methodology

The hydrologic study is based on a review of literature and available data obtained from the USGS, NOAA Atlas, and other mine permit applications. A field reconnaissance was also conducted to confirm the location and characteristics of surface water courses. Designs of control structures are based on requirements of the regulations.

Existing Surface Water Resources

Regional Surface Water Hydrology

Most of the regional area is drained by tributaries to the Green and Colorado Rivers. Principal tributaries are the Price and San Rafael Rivers and Muddy Creek. The Green River flows through the eastern edge of the Central Utah Region.

A USGS Report entitled "Hydrologic Reconnaissance of the Wasatch Plateau - Book Cliffs Coal Field Area, Utah" considers the development of coal resources in Central Utah.[4] The Andalex Loadout Facility lies near the coal resource areas, below the head waters of tributaries to the Price River. Much of the water from the Price River is diverted for irrigation use.

---

[4]Waddell and Others, 1981

Approximately 50 to 70 percent of the stream flow occurs during the May - July snowmelt runoff period.[4] Summer precipitation does not usually produce more runoff than the snowmelt, although intense rainfall may produce high runoff in localized areas. Storms in this area are usually intense, but of relatively short duration. The 100 year -6 hour precipitation event is approximately 2.5 inches in the mountain areas, and only slightly less in the valleys (1.91 inches).

Water quality in the Price River and its' tributaries is good at the higher elevations. In most cases, surface waters at higher elevations have dissolved solid concentrations of less than 250 mg/l and are of a calcium bicarbonate type. At lower elevations, the surface water degrades to a sodium sulfate type with dissolved solids ranging from 250 to more than 6,000 mg/l.[4] These changes are caused by irrigation return flows and natural runoff from areas underlain by Mancos Shale.

Mine Plan Area Surface Water Hydrology

There are no principal surface water courses found within 1/4 mile of the permit area, and no perennial streams within 1 mile of the permit area.

Wildcat Canyon, located approximately 3/8 mile to the north of the permit area, is an ephemeral drainage that drains a large portion of the area north of the Gordon Creek Road and leads into the Price River. No runoff from the permit area flows to Wildcat Canyon.

The North Fork of Gordon Creek is a perennial, low flow, and low quality stream, and is located approximately 1-1/4 miles to the south of the facility. No runoff from the permit area reaches this drainage.

A small ephemeral drainage known as Garley Canyon runs south of the permit area and eventually drains into the Price River approximately 3-1/2 miles southeast of the permit area. Runoff from the permit area would flow into the Garley Canyon drainage and eventually into the Price River but not before passing through a sedimentation pond.

Garley Canyon is a drainage formed in the eroding Mancos slopes below Pinyon - Juniper covered plateaus located west of the permit area. The natural drainage is highly eroded, due to the sparse vegetative groundcover and resulting rapid runoff through the weathered Mancos Shale. This is typical of drainages within the Mancos Shale in this area, and results in a high sulfate, low quality water. Most of the water below the point where Garley Canyon meets the Price River, is diverted and used for irrigation.

The general drainage pattern of the area is shown on Plate 15.

Surface Water Quality

Surface water quality is described in Appendix J, Appendix M and in R645-301-512.240.

R645-301-711.200. POTENTIAL IMPACTS TO THE HYDROLOGIC BALANCE

See Appendix J - Probable Hydrologic Consequences and R645-301-711.100.

R645-301-711.300. COMPLIANCE WITH HYDROLOGIC DESIGN CRITERIA

Andalex will follow its approved Sedimentation and Drainage Control Plan and comply with the UPDES Permit No. UTG-040008, issued May 31, 2003 (see Appendix K). *Under the 2008 Modification Plan (see Appendix S) the UPDES discharge points associated with sediment ponds A, B and D will be transferred to new ponds G, H and I respectively. (See Plate 2)*

Water monitoring plans~~, as well as all hydrologic design details,~~ are discussed in Section R645-301-*723*. *All hydrologic design details are discussed in Appendix R.*

Andalex will comply with the Clean Water Act (33 U.S.C. Section 1251 et. seq.)and all other applicable water quality laws and health and safety standards.

R645-301-711.400. APPLICABLE HYDROLOGIC PERFORMANCE STANDARDS

All applicable hydrologic performance standards will be met.

R645-301-711.500. RECLAMATION ACTIVITIES

Reclamation and post-mining hydrology are discussed under Sections R645-301-512.240 and R645-301-541 *and Appendix R.*

R645-301-712. CERTIFICATION

All cross-sections, maps and plans required have been prepared and certified according to R645-301-512.

R645-301-713. INSPECTIONS

All impoundment inspections are performed according to, and described under, Section R645-301-514.300.

R645-301-720. ENVIRONMENTAL DESCRIPTION

See R645-301-711.100.

R645-301-721. GENERAL REQUIREMENTS

See R645-301-711.100.

R645-301-722. CROSS SECTIONS AND MAPS

See R645-301-510.

R645-301-722.100. LOCATION AND EXTENT OF SUBSURFACE WATER

See R645-301-711.100.

R645-301-722.200. LOCATION OF SURFACE WATER BODIES

See R645-301-711.100.

R645-301-722.300 MONITORING STATIONS

See R645-301-723 and Plates 2 and 15.

R645-301-722.400. WATER WELLS

N/A

R645-301-722.500. EXISTING LAND SURFACE CONFIGURATION

Plate 1 and 2

R645-301-723. SAMPLING AND ANALYSIS

Water Monitoring Plans

Four surface water monitoring stations have been established as

shown on Plate 2. Two of the stations are located in undisturbed drainage above the site and two stations will be in the same drainages below the site. This configuration will show any affects of the operation on the drainage of the area.

Since this was a new permit and no baseline data had been gathered, the stations were monitored according to the Baseline Criteria (parameters and frequency) listed in Table VII-5, "Surface Water Baseline and Operational Water Quality Parameter List", for the first two years. After that time, the stations were monitored according to the parameter and frequency requirements of the operational portion of Table VII-5. Reclamation monitoring will also follow the requirements of the Postmining portion of Table VII-6.

Water monitoring stations will be designated as WCW-1 through WCW-4 for surface monitoring points. In addition, each pond discharge will be monitored according to U.P.D.E.S. requirements. These station numbers will be designated 001 for New Pond G, 002 for New Pond H, 003 for New Pond I, 005 for Existing Pond E and 006 for Existing Pond F. Ponds A, B and D will be eliminated, and UPDES Point 005 will also be eliminated along with Pond D. The runoff formerly reporting to Pond D will now flow to new Pond I.

U.P.D.E.S. points are checked and sampled (if flowing) on a monthly basis. All other water monitoring sites are sampled on a quarterly basis.

Monitoring results will be submitted to the Division quarterly, within sixty days following the end of the reporting quarter.

Baseline monitoring will consisted of eight samples analyzed for the baseline chemical parameters on Table VII-5 (four per annum, collected quarterly during precipitation events). A rain gauge will also be installed at the site, and a log of precipitation events will be maintained on site.

It should be noted that Andalex and its designated laboratory will follow the "Standard Methods for the Examination of Water and Wastewater" for all of the above water samples.

TABLE VII-5

Surface Water Baseline and Operational Water Quality Parameter List

Field Measurements:

* - Water Levels or Flow
* - pH
* - Specific Conductivity (umhos/cm)
* - Temperature (C°)

Laboratory Measurements: (mg/1) IONS AND METALS ANALYSES ARE DISSOLVED, EXCEPT AS NOTED

* - Total Settleable Solids
* - Total Suspended Solids
* - Total Dissolved Solids
* - Total Hardness (as $CaCO_3$)
* - Acidity
- - Aluminum (A1)
- - Arsenic (As)
- - Barium (Ba)
- - Boron (B)
* - Carbonate (CO_3^{-2})
* - Bicarbonate (HCO_3^{-})
- - Cadmium (Cd)
* - Calcium (Ca)
* - Chloride ($C1^{-}$)
- - Chromium (Cr)
- - Copper (Cu)
- - Fluoride (F^{-})
* - Iron (FE) (TOTAL)
* - Iron (Fe) (DISSOLVED)
- - Lead (Pb)
* - Magnesium (Mg)
* - Manganese (Mn) (Total)
* - MANGANESE (MN) (Dissolved)
- - Mercury (Hg)
- - Molybdenum (Mo)
- - Nickel (Ni)
- - Nitrogen: Ammonia (NH_3)
- - Nitrate (NO_3^{-})
- - Nitrite (NO_2)
* - Potassium (K)
- - Phosphate (PO_4^{-3})
- - Selenium (Se)

* - Sodium (Na)

TABLE VII-5 (Continued)

Surface Water Baseline and Operational
Water Quality Parameter List

* - Sulfate (SO_4^{-2})
- - Sulfide (S^{-})
- - Zinc (Zn)
* - Oil and Grease
* - Cation-Anion Balance

-Baseline *Operational

TABLE VII-6

Surface Water Sampling

	Baseline	Operational	Postmining
Type of Sampling Site	Surface Water Bodies	Surface Water Bodies	Surface Water Bodies
Field Measurements (See Table 7-5)	Performed during water level/flow measurements	Performed during water level/flow measurements	Performed during water level/flow measurements
Sample Frequency	Quarterly for lakes, reservoirs, and impound-ments (water level and quality); monthly flow measurements and quarterly water quality measurements (one sample at low flow and high flow each) for perennial streams. Monthly flow and water quality measurements during period of flow for intermittent streams. Sampling for ephemeral streams deter-mined at pre-design conference.	Quarterly for lakes, reservoirs, and impound-ments (water level and quality); monthly flow measurements and quarterly water quality measurements (one sample at low flow and high flow each) for perennial streams. Monthly flow and water quality measurements during period of flow for intermittent streams. Sampling for ephemeral streams deter-mined at pre-design conference.	Two per annum for perennial streams (high & low flow); two per annum during snowmelt and rainfall for intermittent streams.

TABLE VII-6 (Continued)

Surface Water Sampling

	Baseline	Operational	Postmining
Sampling Duration	Two years (one complete year of data before submission of PAP.	Yearly until two years after surface reclamation activities have ceased.	Until termination of bonding.
Type of Data Collected & Reported	Flow and/or water levels and water quality.	Flow and/or water levels and water quality.	Flow and/or water levels and water quality per operational parameters.
Comments	All field measurements should be performed concurrently with water level/flow measurements.	All field measurements should be performed concurrently with water level/flow measurements.	All field measurements should be performed concurrently with water level/flow measurements.
Comments		For every fifth year preceding re-permitting, one sample at low flow and and high flow each should be taken for base-line water quality parameters.	

R645-301-724. BASELINE INFORMATION

See R645-301-723

R645-301-724.100. GROUND WATER INFORMATION

See R645-301-711.100.

R645-301-724.200. SURFACE WATER INFORMATION

See R645-301-711.100.

R645-301-724.300. GEOLOGIC INFORMATION

See R645-301-711.100.

R645-301-724.310. PROBABLE HYDROLOGIC CONSEQUENCES

Appendix J

R645-301-724.320. RECLAIMABILITY

See R645-301-541

R645-301-724.400. CLIMATOLOGICAL INFORMATION

Introduction

The permit area, which is near part of the Wasatch Plateau Coal Field, is located in a mid-latitude steppe climate with the land below the cliffs approaching desert conditions. The nearest weather recording station is located approximately seven miles southeast of the Loadout in Price, Utah.

Temperatures at the site are 3 to 5°F cooler than at Price, seven miles southeast and 1,500 feet lower.

Average monthly temperatures at Price range from 36.9°F in January to 90° in July. Extreme temperatures of record are -31° and 108°F. Due to the elevation and a predominance of clear skies and dry air, daily temperature ranges are rather large, averaging 24° in winter and 32° in summer. Average annual precipitation is 9.31 inches at Price. The 100-year 6-hour precipitation event is 1.9 inches. (Table VII-2). Snowfall is generally light, averaging 21.1 inches annually, at Price. Potential evaporation is about 36 inches per year. The area is almost completely surrounded by mountains which act as a barrier to storms approaching from every direction except south.

Source of Data

National Oceanic and Atmospheric Administration, National Climatic Center, Asheville, North Carolina.

Western Regional Climate Center, Reno, Nevada.

Climatological Factors

Precipitation

The precipitation in the area, which is largely controlled by elevation, varies from 0.50 inches per month to 1.22 inches per month, with an annual average of 9.31 inches.

The principal rainfall is in late summer/early fall when the area is occasionally subjected to thunderstorm activity associated with moisture-laden air masses moving in from the Gulf of Mexico.

Snowfall is generally light, averaging less than 22 inches annually.

The Monthly Climate Summary for the Period of Record (9/1/1968 - 6/30/2004) is shown below on Table VII-1.

TABLE VII-1

PRICE WAREHOUSES, UTAH (427026)

Period of Monthly Climate Summary

Period of Record: 9/1/1968 to 6/30/2004

	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	36.9	42.8	52.5	63.2	72.5	83.8	90.0	88.4	79.5	64.8	49.5	40.1	63.7
Average Min. Temperature (F)	13.4	19.7	27.6	34.6	42.9	52.1	58.3	57.0	48.1	37.5	25.7	16.7	36.1
Average Total Precipitation (in.)	0.76	0.73	0.73	0.50	0.66	0.57	0.89	1.04	1.10	1.22	0.59	0.51	9.31
Average Total Snowfall (in.)	8.0	4.1	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2	2.2	5.3	21.1
Average Snow Depth (in.)	3	2	0	0	0	0	0	0	0	0	0	1	1

Percent of possible observations for period of record.

Max. Temp.: 77.6% Min. Temp.: 77.7% Precipitation: 94.5% Snowfall: 93.1% Snow Depth: 88.3%

Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

TABLE VII-2

ESTIMATED RETURN PERIODS FOR SHORT DURATION PRECIPITATION
(inches)

Station: Price Elevation: 5680
Latitude: 39° 37' Longitude: 110° 50'

DURATION

Years	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	12 Hr	24 Hr
1	.08	.13	.17	.23	.29	.37	.44	.62	.78	.95
2	.12	.18	.23	.32	.40	.49	.58	.80	1.00	1.20
5	.16	.25	.32	.44	.56	.68	.79	1.07	1.32	1.58
10	.20	.31	.39	.54	.68	.81	.94	1.25	1.53	1.82
25	.24	.37	.47	.65	.82	.98	1.13	1.50	1.83	2.18
50	.28	.43	.54	.75	.95	1.12	1.29	1.71	2.08	2.47
100	.31	.49	.62	.85	1.08	1.27	1.45	1.91	2.32	2.74

Table VII-3 shows the average monthly precipitation for the period 1936-1976.

The climatology summary by month for period 1936-1965 is given in Table VII-4.

Temperature

The average annual maximum temperature for the period 1968 - 2004 was 63.7 degrees. The annual mean temperature was 49.9 degrees and the annual minimum temperature was 36.1 degrees. See Table VII-1.

Summers are characterized by hot days and cool nights. However, the high temperatures are not oppressive since the relative humidity is low. The hottest month is July with the maximum temperature on most days nears 90 degrees and the lows in the upper 50's.

The winters are cold and uncomfortable, but usually not severe, due in part to the protecting influence of the mountain ranges to the north and east which prevent cold arctic air masses from moving into the area.

Temperatures of 100 degrees or higher during summer or 15 degrees below zero or colder during winter are likely to occur once every three years.

The freeze-free period, or growing season, averages about five months in length, from early May to early October.

Average Temperature values are given on Table VII-1.

Wind

The prevailing wind direction for the Price-Carbon County area for the period 1992-2002 is from the North for all months of the year.(Table VII-3) The average wind speed for this same period is shown to be 6.2 mph, with the lowest average speed of 4.7 mph in December, and the highest average speed of 7.7 mph in April, (Table VII-4).

TABLE VII-3

UTAH
Prevailing Wind Directions

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
BRYCE CANYON AP, UT (KBCE).	W	W	W	W	W	W	W	W	W	W	W	W	W
CANYONLANDS AP-MOAB, UT	NW	W	W	W	W	SW	SE	E	W	W	W	NW	W
CEDAR CITY AP, UT (KCDC).	SSW	SW	SSW	SSW	SSW	SSW	SW	SSW	SSW	SW	N	SSW	SSW
LOGAN AIRPORT, UT (KLGU).	N	N	N	N	N	N	N	S	N	N	N	N	N
MILFORD AIRPORT, UT (KMLF).	S	SSW	S	SSW	S	SSW	SSW	S	S	S	S	S	S
OGDEN AIRPORT, UT (KOGD).	SSE	S	SSE	S	S	S	S	S	S	S	S	S	S
OGDEN-HILL AFB, UT (KHIF).	E	E	E	E	E	E	E	E	E	E	E	E	E
PRICE-CARBON COUNTY AP, UT	N	N	N	N	N	N	N	N	N	N	N	N	N
PROVO MUNI AP, UT (KPVU).	NW	NW	NW	NW	NW	NW	SE	SE	SE	SE	SSE	SSE	NW
SALT LAKE CITY AP, UT (KSLC)	S	S	SSE	SSE	SSE	S	SSE	SSE	SSE	SE	SE	S	SSE
ST. GEORGE MUNI AP, UT(KSGU)	E	ENE	ENE	W	W	W	W	ENE	ENE	ENE	E	E	ENE
VERNAL AIRPORT, UT (KVEL).	W	W	WNW	W	W	W	W	W	W	W	WNW	W	W
WENDOVER AP, UT (KENV).	NW	NW	E	NW	E	E	E	E	E	E	E	E	E

Prevailing wind direction is based on the hourly data from 1992-2002 and is defined as the direction with the highest percent of frequency. Many of these locations have very close secondary maximum which can lead to noticeable differences month to month.
Http://www/wrcc/dri/edu/htmlfiles/westwinddir.html

TABLE VII-4

UTAH
Prevailing Wind Speed (mph)

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
BRYCE CANYON AP, UT (KBCE).	8.4	8.9	9.1	10.6	10.0	10.1	8.5	8.5	8.7	8.4	8.2	6.9	8.8
CANYONLANDS AP-MOAB, UT	4.0	5.3	6.9	9.1	9.2	8.5	7.4	6.9	6.3	5.2	4.0	3.5	6.2
CEDAR CITY AP, UT (KCDC).	7.2	7.6	8.4	9.1	9.4	9.3	8.5	8.2	7.5	6.7	6.5	6.6	7.9
LOGAN AIRPORT, UT (KLGU).	3.2	3.8	4.9	6.1	5.8	5.7	5.9	5.2	4.3	4.1	3.4	3.0	4.5
MILFORD AIRPORT, UT (KMLF).	10.5	10.4	10.8	11.6	11.6	12.3	11.9	11.0	9.9	10.0	9.5	9.9	10.7
OGDEN AIRPORT, UT (KOGD).	5.3	6.2	7.3	8.0	7.6	7.7	7.2	7.4	6.7	6.4	5.9	5.8	6.8
OGDEN-HILL AFB, UT (KHIF).	8.7	9.5	9.8	9.7	9.1	9.5	9.8	9.7	9.3	9.0	8.9	9.1	9.3
PRICE-CARBON COUNTY AP, UT	5.0	5.1	7.1	7.7	7.5	7.4	6.5	6.1	6.2	6.1	5.4	4.7	6.2
PROVO MUNI AP, UT (KPVU).	4.8	5.7	7.2	7.9	7.2	7.6	6.7	6.7	6.3	5.8	5.4	5.2	6.4
SALT LAKE CITY AP, UT (KSLC)	7.0	7.5	8.7	9.3	9.1	9.5	9.6	9.9	8.9	8.0	7.7	7.5	8.6
ST. GEORGE MUNI AP, UT(KSGU)	3.5	4.5	5.7	7.5	8.3	8.5	7.9	7.3	6.0	4.4	3.4	3.1	5.8
VERNAL AIRPORT, UT (KVEL).	3.2	4.0	5.9	7.3	7.5	7.0	5.8	5.6	5.3	4.9	4.0	3.0	5.3
WENDOVER AP, UT (KENV).	1.8	5.5	7.2	8.9	8.8	8.7	8.1	7.4	6.4	5.9	5.0	4.7	6.8

The above monthly average wind speeds are based on hourly observations from all reporting airports in the Western United states and based on data from 1992-2002. Some stations have at least 2 years of hourly data used for the averages. Averages for first order stations may differ from data seen in the LCD's due to a different period of record used and a possible change in the height of the wind instruments. The standard anemometer height for all current stations is 10 meters.
Http://www/wrcc/dri/edu/htmlfiles/westwinddir.html

R645-301-724.410. CLIMATOLOGICAL FACTORS

See R645-301-724.400.

R645-301-724.411. AVERAGE SEASONAL PRECIPITATION

See R645-301-724.400.

R645-301-724.412. PREVAILING WINDS

See R645-301-724.400.

R645-301-724.413. SEASONAL TEMPERATURE RANGES

See R645-301-724.400.

R645-301-724.420. OTHER INFORMATION

N/A

R645-301-724.500. SUPPLEMENTAL INFORMATION

N/A

R645-301-724.700. STREAMS

See R645-301-711.100.

R645-301-725. BASELINE CUMULATIVE IMPACT AREA INFORMATION

See R645-301-711.100 and Appendix J.

R645-301-725.100. INFORMATION FROM FEDERAL OR STATE AGENCIES

See R645-301-711.100 and Appendix J.

R645-301-725.200. INFORMATION FROM APPLICANT

See R645-301-711.100 and Appendix J.

R645-301-725.300. RESTRICTIONS ON PERMIT

N/A

R645-301-726. MODELING

N/A

R645-301-727. ALTERNATIVE WATER SOURCE INFORMATION

The permit area and adjacent areas contain no renewable ground water or surface water resources; therefore water right protection or mitigation measures are not anticipated to be required at this operation. Also, this is a surface operation, with no underground mining or subsidence potential. All water used on site is hauled in.

R645-301-728. PROBABLE HYDROLOGIC CONSEQUENCES (PHC) DETERMINATION

Appendix J

R645-301-728.100. DETERMINATION OF PHC

Appendix J

R645-301-728.200. BASIS OF DETERMINATION

Appendix J

R645-301-728.300. PHC DETERMINATION FINDINGS

Appendix J

R645-301-728.310. ADVERSE IMPACTS TO HYDROLOGIC BALANCE

Appendix J

R645-301-728.320. ACID FORMING OR TOXIC FORMING MATERIALS

Appendix J

R645-301-728.330. IMPACT OF OPERATIONS

See Appendix J.

R645-301-728.331. SEDIMENT YIELD FROM DISTURBED AREA

See Appendix R.

R645-301-728.332. WATER QUALITY PARAMETERS

R645-301-*723*

R645-301-728.333. FLOODING OR STREAM-FLOW ALTERATION

N/A

R645-301-728.334. GROUND WATER AND SURFACE WATER AVAILABILITY

See R645-301-711.100 and Appendix J.

R645-301-728.335. OTHER CHARACTERISTICS

Appendix J

R645-301-728.340. IMPACT ON SURFACE OR GROUND WATER

Appendix J

R645-301-728.350. IMPACT ON STATE-APPROPRIATE WATER

Appendix J

R645-301-728.400. PERMIT REVISIONS

Appendix J

R645-301-729. CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

(BY DIVISION)

R645-301-729.100. DIVISION ASSESSMENT

(BY DIVISION)

R645-301-729.200. PERMIT REVISIONS

N/A

R645-301-730. OPERATION PLAN

See R645-301-511.100.

R645-301-731. GENERAL REQUIREMENTS

See R645-301-511.100.

R645-301-731.100. HYDROLOGIC BALANCE PROTECTION

See R645-301-711-300.

R645-301-731.110. GROUND WATER PROTECTION

Appendix J and R645-301-711.100.

R645-301-731.111. GROUND WATER QUALITY

Appendix J and R645-301-711.100.

R645-301-731.112. SURFACE MINING OPERATIONS

N/A

R645-301-731.120. SURFACE WATER PROTECTIONS

Appendix J and R645-301-711.100.

R645-301-731.121. SURFACE WATER QUALITY

Appendix J, Appendix M and R645-301-711.100.

R645-301-731.122. SURFACE WATER QUANTITY PLAN

Appendix J and R645-301-711.100.

R645-301-731.200. WATER MONITORING

See R645-301-723.

R645-301-731.210. GROUND WATER MONITORING

There is no ground water monitoring at this site. See R645-301-711.100.

R645-301-731.211. GROUND WATER MONITORING PLAN

There is no ground water monitoring at this site. See R645-301-711.100.

R645-301-731.212. SAMPLING AND REPORTING DATA

See R645-301-723.

R645-301-731.213. NON-ESSENTIAL AQUIFERS

N/A

R645-301-731.214. DURATION

See R645-301-723.

R645-301-731.214.1 SUITABILITY

See R645-301-723.

R645-301-731.214.2 COMPLIANCE

See R645-301-723.

R645-301-731.215. EQUIPMENT, STRUCTURES AND OTHER DEVICES USED IN CONJUNCTION WITH MONITORING

See R645-301-723.

R645-301-731.220. SURFACE WATER MONITORING

See R645-301-723.

R645-301-731.221. SURFACE WATER MONITORING PLAN

See R645-301-723.

R645-301-731.222 DESCRIPTION

See R645-301-*723.*

R645-301-731.222.1 PARAMETERS

See R645-301-*723.*

R645-301-731.222.2 POINT SOURCE DISCHARGES

See R645-301-*723 and Appendix K.*

R645-301-731.223. SAMPLING AND REPORTING DATA

See R645-301-*723.*

R645-301-731.224. DURATION

See R645-301-*723.*

R645-301-731.224.1 SUITABILITY

See R645-301-*723.*

R645-301-731.224.2 COMPLIANCE

See R645-301-*723.*

R645-301-731.225. EQUIPMENT, STRUCTURES AND OTHER DEVICES USED IN CONJUNCTION WITH MONITORING

See R645-301-*723.*

R645-301-731.300. ACID AND TOXIC FORMING MATERIALS

See R645-301-711.100, R645-301-528.300 and Appendix J.

R645-301-731.310. DRAINAGE INTO SURFACE AND GROUND WATER

See R645-301-*711.100 and Appendix J.*

R645-301-731.311. MATERIAL ADVERSELY AFFECTING WATER QUALITY

See R645-301-512.240

R645-301-731.312. STORING MATERIALS

See R645-301-512.240

R645-301-731.320. DISPOSAL PROVISIONS

See R645-301-512.240

R645-301-731.400. TRANSFER OF WELLS

No transfer of wells has taken place, nor is any transfer anticipated.

R645-301-731.500. DISCHARGES

See *R645-301-723 and Appendix R.*

R645-301-731.510. DISCHARGES INTO AN UNDERGROUND MINE

N/A

R645-301-731.511. DEMONSTRATION

N/A

R645-301-731.511.1 PREVENTION OF DAMAGE

N/A

R645-301-731.511.2 VIOLATION OF WATER QUALITY STANDARDS OR EFFLUENT LIMITATIONS

N/A

R645-301-731.511.3 COMPLIANCE REQUIREMENTS

N/A

R645-301-731.511.4 MEET WITH THE APPROVAL OF MSHA

N/A

R645-301-731.512. DISCHARGE LIMITATIONS

N/A

R645-301-731.512.1 WATER

N/A

R645-301-731.512.2 COAL PROCESSING WASTE

N/A

R645-301-731.512.3 FLY ASH

N/A

R645-301-731.512.4 SLUDGE FROM ACID MINE DRAINAGE TREATMENT

N/A

R645-301-731.512.5 FLUE-GAS DESULFURIZATION SLUDGE

N/A

R645-301-731.512.6 INERT MATERIALS USED FOR STABILIZING UNDERGROUND MINES

N/A

R645-301-731.512.7 UNDERGROUND MINE DEVELOPMENT WASTE

N/A

R645-301-731.513. DIVERTING MINE WATER INTO UNDERGROUND WORKINGS

N/A

R645-301-731.520. GRAVITY DISCHARGES FROM MINE WORKINGS

N/A

R645-301-731.521. DISCHARGE CONTROL

See Appendix R.

R645-301-731.522. PREVENTION OF DISCHARGE

N/A

R645-301-731.530. REPLACEMENT OF STATE-APPROPRIATED WATER SUPPLY

N/A

R645-301-731.600. STREAM BUFFER ZONES

N/A

R645-301-731.610. BUFFER ZONE LOCATIONS

N/A

R645-301-731.611. VIOLATION OF WATER QUALITY STANDARDS OR EFFLUENT LIMITATIONS

Coal processing and reclamation operations will not cause or contribute to the violation of applicable Utah or federal water quality standards and will not adversely affect the water quantity and quality of other environmental resources of the stream.

R645-301-731.612. STREAM DIVERSIONS

See Appendix R, Culvert Design

R645-301-731.620. BUFFER ZONE SIGNS AND MARKERS

N/A

R645-301-731.700. CROSS SECTIONS AND MAPS

Plate 2.

R645-301-731.710. WATER SUPPLY INTAKES

N/A

R645-301-731.720. WATER HANDLING AND STORAGE FACILITIES

Water is trucked from Price for culinary use and is stored in one 12,000-gallon tank on the property.

R645-301-731.730. MONITORING LOCATIONS

See *2* and Plate 15.

R645-301-731.740. MAPS

See Volume II, R645-301-510.

R645-301-731.750. CROSS SECTIONS

See Volume II, R645-301-510.

R645-301-731.760. OTHER RELEVANT DRAWINGS

See Appendix R.

R645-301-731.800. WATER RIGHTS AND REPLACEMENT

Appendix G

R645-301-732. SEDIMENT CONTROL MEASURES

See Appendix R.

R645-301-732.100. SILTATION STRUCTURES

See Appendix R.

R645-301-732.200. SEDIMENTATION PONDS

See Appendix R.

R645-301-732.210. COMPLIANCE REQUIREMENTS

See Appendix R.

R645-301-732.220. MSHA REQUIREMENTS

N/A

R645-301-732.300. DIVERSIONS

See Appendix R.

R645-301-732.400. ROAD DRAINAGE

See Appendix R, Plate 2, also R645-301-512.250.

R645-301-732.410. ALTERATION OR RELOCATION OF A NATURAL DRAINAGEWAY

See Appendix R.

R645-301-732.420. INLET PROTECTIONS

See Appendix R.

R645-301-733. IMPOUNDMENTS

See Appendix R.

R645-301-733.100. GENERAL PLANS

See Appendix R.

R645-301-733.110. CERTIFICATION

See Appendix R and Appendix H, *also Plates 3A thru 3H*

R645-301-733.120. MAPS AND CROSS SECTIONS

See Plates 3A thru 3H., also R645-301-510.

R645-301-733.130. NARRATIVE

See Appendix R.

R645-301-733.140. SURVEY RESULTS

Appendix J

R645-301-733.150. HYDROLOGIC IMPACT

Appendix J

R645-301-733.160. DESIGN PLANS AND CONSTRUCTION SCHEDULE

See Appendix R.

R645-301-733.200. PERMANENT AND TEMPORARY IMPOUNDMENTS

Permanent Impoundment - The permanent impoundment shown on Plate 2 is a 2-celled structure that catches most of the main canyon drainage from the west. The upper cell is a vegetated basin constructed by a previous owner. Upon surveying the upper cell, it was determined to be inadequate to contain runoff from a 100 year - 6 hour event for the area; therefore, a second, lower cell was constructed in the fall of 1991. The structures were resurveyed after completion, and now have adequate capacity (1.114 acre feet) to fully contain the runoff from a 100 year - 6 hour event (1.031 acre feet).

The upper cell is fitted with two 18" cmp overflows, one for primary overflow and one for emergency overflow. These culverts pass beneath the road between the cells and discharge into the lower cell via erosion - protected channels. The lower cell is equipped with an adequately sized open-notch overflow, protected by rip-rap. This overflow is for emergency purposes only, and will be used only for discharge of runoff beyond the design event (100 year - 6 hour). Details of the "As-Constructed" Permanent Impoundment are shown on Plate 3G. Volume calculations and requirements are summarized in Appendix R.

Upon final reclamation of the area, the two 18" cmp culverts between cells will be replaced by an open-notch overflow of the same size and design of that existing in the lower cell. The area will be reseeded according to the approved methodology and specifications in the MRP. The 2-celled pond will then be left inplace as a permanent feature and allowed to go through natural succession. The upper cell of the impoundment has been inplace

since approximately 1971, and has never overflowed or breached since that time. The lower cell will simply add to that level of protection. Leaving the impoundment inplace will provide for wildlife enhancement as well as runoff protection, through the establishment of a permanent waterhole to capture runoff.

Depression Area:

This area is located below the 2-celled Permanent Impoundment, between the Permanent Impoundment and the railroad tracks. The area receives a very small amount of water from direct precipitation, and would otherwise receive larger amounts of water only through overflow or failure of the Permanent Impoundment. Calculations show the Depression Area to have a capacity of 4.99 acre feet at an elevation 2' below the tracks - this is 616% of the capacity of the Permanent Impoundment requirements for a 100 year - 6 hour storm event. The Depression Area, however, does not have an overflow; therefore, the following monitoring and de-watering plan is proposed in the unlikely event of significant water accumulation:

(1) Monitoring - A steel post will be set at the low point of the depression area. This post will be marked at an elevation of 2' above ground level. This elevation will mark the point at which the area will be dewatered.

(2) Dewatering - If water should accumulate to the mark on the monitoring post, the area will be dewatered using the pump system approved for decanting the sediment ponds on the property.

Due to the size and location of this area along the Utah Railway Right-of-Way, there are no plans to remove or otherwise alter this area upon final reclamation. The justifications for leaving it in place would be the same as those for the Permanent Impoundment, since that would be the primary source of water.

The permanent impoundment will meet the requirements of R645-301-552.200 to allow authorization by the Division, based on the following:

1. The quality of the water will be suitable for wildlife watering, since it will contain only natural runoff;

2. The level of water will vary directly with runoff events, evaporation, and usage;

3. *The impoundment will be in an area of controlled public access; however, the area will not be restricted to wildlife use;*

4. *No diminution of water quality or quantity is expected from this impoundment - it will be strictly runoff water, which has been captured in this impoundment for many years prior to the filing of this permit;*

5. *The impoundment does not meet the criteria or size of MSHA 30 CFR 77.216 (a);*

6. *The size of the impoundment is adequate for wildlife watering;*

7. *The impoundment has been, and will continue to be, suitable for the post-mining land use, which is wildlife watering;*

8. *Perimeter slopes are stable and do not exceed 2v:1h. Slopes are vegetated, as is the inlet area for erosion protection;*

9. *The impoundment is mostly incised, and does not have outlet structures; however, no discharge is expected since the pond is well oversized for a 100 year - 6 hour event (See Table V-7A).*

10. *The impoundment shall be maintained as necessary during the mining operation;*

11. *The impoundment design and construction is certified by a registered, professional engineer.*

R645-301-733.210. REQUIREMENTS

See R645-301-733.200.

R645-301-733.220. DEMONSTRATION FOR PERMANENT IMPOUNDMENTS

See R645-301-733.200.

R645-301-733.221. ADEQUACY FOR INTENDED USE

See R645-301-733.200.

R645-301-733.222. WATER QUALITY AND EFFLUENT LIMITATIONS

See R645-301-733.200.

R645-301-733.223. WATER LEVEL

See R645-301-733.200.

R645-301-733.224. FINAL GRADING

See R645-301-733.200.

R645-301-733.225. DIMINUTION OF QUALITY AND QUANTITY OF WATER UTILIZED BY OTHERS

See R645-301-733.200.

R645-301-733.226. SUITABILITY FOR POSTMINING LAND USE

See R645-301-733.200.

R645-301-733.230. TEMPORARY IMPOUNDMENTS

See R645-301-733.200.

R645-301-733.240. HAZARD NOTIFICATIONS

See R645-301-733.200.

R645-301-734. DISCHARGE STRUCTURES

See R645-301-733.200.

R645-301-735. DISPOSAL OF EXCESS SPOIL

See R645-301-512.230.

R645-301-736. COAL MINE WASTE

See R645-301-512.230.

R645-301-737. NON-COAL MINE WASTE

See R645-301-512.230.

R645-301-738. TEMPORARY CASING AND SEALING OF WELLS

N/A

R645-301-740. DESIGN CRITERIA AND PLANS

See Appendix R.

R645-301-741. GENERAL REQUIREMENTS

See Appendix R.

R645-301-742. SEDIMENT CONTROL MEASURES

See Appendix R.

R645-301-742.100. GENERAL REQUIREMENTS

See Appendix R.

R645-301-742.110. DESIGN

See Appendix R.

R645-301-742.111. PREVENTION

See Appendix R.

R645-301-742.112. EFFLUENT LIMITATIONS

Appendix K

R645-301-742.113. EROSION PROTECTION

See Appendix R.

R645-301-742.120. MEASURES AND METHODS

See Appendix R.

R645-301-742.121. RETAINING SEDIMENT WITHIN DISTURBED AREAS

See Appendix R.

R645-301-742.122. DIVERTING RUNOFF AWAY FROM DISTURBED AREAS

See Appendix R.

R645-301-742.123. DIVERTING RUNOFF USING PROTECTED CHANNELS

See Appendix R.

R645-301-724.124. PHYSICAL TREATMENT TO REDUCE FLOW OR TRAP SEDIMENT

See Appendix R.

R645-301-742.125. CHEMICAL TREATMENT

N/A

R645-301-742.126. IN-MINE TREATMENT

N/A

R645-301-742.200. SILTATION STRUCTURES

See Appendix R.

R645-301-742.210. GENERAL REQUIREMENTS

See Appendix R.

R645-301-742.211. DESIGN

See Appendix R.

R645-301-742.212. REQUIREMENTS

See Appendix R.

R645-301-742.213. SILTATION STRUCTURES WHICH IMPOUND WATER

See Appendix R.

R645-301-742.214. POINT SOURCE DISCHARGES

See R645-301-723 and Appendix K.

R645-301-742.220. SEDIMENTATION PONDS

See Appendix R.

R645-301-742.221. USE

See Appendix R.

R645-301-742.221.1 INDIVIDUALLY OR IN SERIES

See Appendix R.

R645-301-742.221.2 LOCATION

See Appendix R., Plate 2

R645-301-742.221.3 DESIGN, CONSTRUCTION AND MAINTENANCE

See Appendix R.

R645-301-742.221.31 SEDIMENT STORAGE VOLUME

See Appendix R.

R645-301-742.221.32 DETENTION TIME

See Appendix R.

R645-301-742.221.33 DESIGN EVENT

See Appendix R.

R645-301-742.221.34 DEWATERING DEVICE

See Appendix R.

R645-301-742.221.35 SHORT CIRCUITING

See Appendix R.

R645-301-742.221.36 SEDIMENT REMOVAL

See Appendix R.

R645-301-742.221.37 EXCESSIVE SETTLEMENT

See Appendix R.

R645-301-742.221.38 EMBANKMENT MATERIAL

See Appendix R.

R645-301-742.221.39 COMPACTION

See Appendix R.

R645-301-742.222. MSHA SEDIMENTATION PONDS

N/A

R645-301-742.223. OTHER SEDIMENTATION PONDS

See Appendix R.

R645-301-745.223.1 OPEN CHANNEL SPILLWAY

See Appendix R.

R645-301-742.223.2 LINING

See Appendix R.

R645-301-742.224. TEMPORARY IMPOUNDMENT - EXCEPTION

N/A

R645-301-742.225. EXCEPTION TO LOCATION

N/A

R645-301-742.225.1. IMPOUNDMENTS MEETING 30 CFR SEC.77.216(a)

N/A

R645-301-742.225.2. OTHER MSHA IMPOUNDMENTS

N/A

R645-301-742.230. OTHER TREATMENT FACILITIES

N/A

R645-301-742.231. DESIGN EVENT

N/A

R645-301-742.232. REQUIREMENTS

N/A

R645-301-742.240. EXEMPTIONS

N/A

R645-301-742.300. DIVERSIONS

See Appendix R.

R645-301-742.310. GENERAL REQUIREMENTS

See Appendix R.

R645-301-742.311. REQUIREMENTS

See Appendix R.

R645-301-742.312. DESIGN

See Appendix R.

R645-301-742.312.1 STABILITY

See Appendix R.

R645-301-742.312.2 FLOOD PROTECTION

See Appendix R.

R645-301-742.312.3 SUSPENDED SOLIDS

See Appendix R.

R645-301-742.312.4 COMPLY WITH OTHER REGULATIONS

See Appendix R.

R645-301-742.313. TEMPORARY AND PERMANENT DIVERSIONS

See Appendix R.

R645-301-742.314. ADDITIONAL DESIGN CRITERIA

See Appendix R.

R645-301-742.320. DIVERSION OF PERENNIAL AND INTERMITTENT STREAMS

N/A

R645-301-742.321. BUFFER ZONE REQUIREMENTS

N/A

R645-301-742.322. DESIGN CAPACITY

N/A

R645-301-742.323. DESIGN EVENT

N/A

R645-301-742.324. CERTIFICATION

N/A

R645-301-742.330. DIVERSION OF MISCELLANEOUS FLOWS

See Appendix R.

R645-301-742.331. REQUIREMENTS

See Appendix R.

R645-301-742.332. DESIGN

See Appendix R.

R645-301-742.333. DESIGN EVENT

See Appendix R.

R645-301-742.400. ROAD DRAINAGE

See Appendix R.

R645-301-742.410. ALL ROADS

See Appendix R.

R645-301-742.411. PROTECTION AND SAFETY

See Appendix R.

R645-301-742.412. INTERMITTENT OR PERENNIAL STREAM RESTRICTION

N/A

R645-301-742.413. DOWNSTREAM SEDIMENTATION AND FLOODING

See Appendix R.

R645-301-742.420. PRIMARY ROADS

See Appendix R.,

R645-301-742.421. EROSION PROTECTION

See Appendix R.

R645-301-742.422. STREAM FORDS

N/A

R645-301-742.423. DRAINAGE CONTROL

See Appendix R.

R645-301-742.423.1 PRIMARY ROAD DESIGN CRITERIA

See R645-301-512.250.

R645-301-742.423.2 DRAINAGE PIPES AND CULVERTS

See Appendix R.

R645-301-742.423.3 DRAINAGE DITCHES

See Appendix R.

R645-301-742.423.4 NATURAL STREAM CHANNELS

See Appendix R.

R645-301-742.423.5 REQUIREMENTS

See Appendix R.

R645-301-743. IMPOUNDMENTS

See Appendix R.

R645-301-743.100. GENERAL REQUIREMENTS

See Appendix R.

R645-301-743.110. MSHA IMPOUNDMENTS

N/A

R645-301-743.120. CERTIFICATION AND FREEBOARD REQUIREMENTS

See Appendix R.

R645-301-743.130. SPILLWAYS

See Appendix R.

R645-301-743.131. APPROVAL OF SINGLE OPEN CHANNEL SPILLWAY

The Division may approve a single-open channel spillway that is:

R645-301-743.131.1. NON-ERODIBLE CONSTRUCTION

See Appendix R

R645-301-743.131.2. EARTH- OR GRASS-LINED WITH NON-EROSIVE FLOWS

N/A

R645-301-743.131.3. REQUIRED DESIGN EVENT

See Appendix R

R645-301-743.131.4. NRCS CLASS B OR C DAMS

N/A

R645-301-743.131.5. MSHA IMPOUNDMENTS

N/A

R645-301-743.131.6. NON-MSHA IMPOUNDMENTS

See Appendix R

R645-301-743.132. ALTERNATE SEDIMENT POND CRITERIA

N/A

R645-301-743.140. INSPECTIONS

See Appendix R.

R645-301-743.200. SPILLWAY DESIGN EVENT FOR

PERMANENT IMPOUNDMENTS

See Appendix R.

R645-301-743.300. **SPILLWAY DESIGN EVENT FOR TEMPORARY IMPOUNDMENTS**

See Appendix R.

R645-301-744. **DISCHARGE STRUCTURES**

See Appendix R.

R645-301-744.100. **EROSION CONTROL**

See Appendix R.

R645-301-744.200. **DESIGN**

See Appendix R.

R645-301-745. **DISPOSAL OF EXCESS SPOIL**

See R645-301-512.230.

R645-301-745.100. **GENERAL REQUIREMENTS**

See R645-301-512.230.

R645-301-745.110. **DISPOSAL AREA**

See R645-301-512.230.

R645-301-745.111. **EFFECTS ON SURFACE AND GROUND WATER**

See R645-301-512.230.

R645-301-745.112. **IMPOUNDMENTS ON FILL**

N/A

R645-301-745.113. **COVER**

See R645-301-512.230.

R645-301-745.120. DRAINAGE CONTROL

N/A

R645-301-745.121. DIVERSIONS

N/A

R645-301-745.122. UNDERDRAINS

N/A

R645-301-745.200. VALLEY FILLS AND HEAD-OF-HOLLOW FILLS

N/A

R645-301-745.210. REQUIREMENTS

N/A

R645-301-745.220. DRAINAGE CONTROL

N/A

R645-301-745.221. RESTRICTIONS

N/A

R645-301-745.222. RUNOFF CONTROL

N/A

R645-301-745.300. DURABLE ROCK FILLS

N/A

R645-301-745.310. REQUIREMENTS

N/A

R645-301-745.320. UNDERDRAINS

N/A

R645-301-745.330. RUNOFF CONTROL

N/A

R645-301-745.400. PRE-EXISTING BENCHES

N/A

R645-301-746. COAL MINE WASTE

See R645-301-512.230.

R645-301-746.100. GENERAL REQUIREMENTS

See R645-301-512.230.

R645-301-746.110. PLACEMENT

See R645-301-512.230.

R645-301-746.120. EFFECTS ON SURFACE AND GROUND WATER

See R645-301-512.230.

R645-301-746.200. REFUSE PILES

See R645-301-513.400.

R645-301-746.210. REQUIREMENTS

See R645-301-513.400.

R645-301-746.211. SEEPS AND SPRINGS

N/A

R645-301-746.212. UNCONTROLLED SURFACE DRAINAGE

N/A

R645-301-746.213. UNDERDRAINS

N/A

R645-301-746.220. SURFACE AREA STABILIZATION

N/A

R645-301-746.221. SLOPE PROTECTION

N/A

R645-301-746.222. IMPOUNDMENT RESTRICTIONS

N/A

R645-301-746.300. IMPOUNDING STRUCTURES

N/A

R645-301-746.310. COAL MINE WASTE

See R645-301-512.230.

R645-301-746.311. REQUIREMENTS

See R645-301-512.230.

R645-301-746.312. MSHA IMPOUNDING STRUCTURE

N/A

R645-301-746.320. SPILLWAYS AND OUTLET WORK

N/A

R645-301-746.330. DRAINAGE CONTROL

N/A

R645-301-746.340. WATER STORAGE

N/A

R645-301-746.400. RETURN OF COAL PROCESSING WASTE TO ABANDONED UNDERGROUND WORKINGS

N/A

R645-301-746.410. HYDROLOGIC IMPACTS

N/A

R645-301-746.420. MONITORING WELLS

N/A

R645-301-746.430. PNEUMATIC BACKFILLING

N/A

R645-301-747. DISPOSAL OF NON-COAL MINE WASTE

See R645-301-512.230.

R645-301-747.100. REQUIREMENTS

See R645-301-512.230.

R645-301-747.200. PLACEMENT AND STORAGE

See R645-301-512.230.

R645-301-747.300. FINAL DISPOSAL

See R645-301-512.230.

R645-301-748. CASING AND SEALING OF WELLS

N/A

R645-301-750. PERFORMANCE STANDARDS

All coal mining and reclamation operations will be conducted to minimize disturbance to the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area and support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of R645-301 and R645-302.

R645-301-751. WATER QUALITY STANDARDS AND EFFLUENT LIMITATIONS

Discharges or water from areas disturbed by coal processing and reclamation operations will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434.

R645-301-752. SEDIMENT CONTROL MEASURES

Sediment control measures must be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-512.240,R645-301-732, R645-301-742 and R645-301-760.

R645-301-752.100. SILTATION STRUCTURES AND DIVERSIONS

See Appendix R.

R645-301-752.200. ROAD DRAINAGE

See R645-301-512.250.

R645-301-752.210. CONTROL OF EROSION AND POLLUTION

See Appendix R.

R645-301-752.220. CONTROL OF SUSPENDED SOLIDS

See Appendix R.

R645-301-752.230. COMPLIANCE WITH EFFLUENT STANDARDS

See Appendix R.

R645-301-752.240. MINIMIZE DIMINUTION OF DEGRADATION OF WATER QUALITY

See Appendix R.

R645-301-752.250. ALTERATION OF STREAM FLOW OR CHANNELS

See Appendix R.

R645-301-753. **IMPOUNDMENTS AND DISCHARGE STRUCTURES**

See Appendix R.

R645-301-754. **DISPOSAL OF EXCESS SPOIL, COAL MINE WASTE AND NON-COAL MINE WASTE**

See R645-301-512.230.

R645-301-755. **CASING AND SEALING OF WELLS**

N/A

R645-301-760. **RECLAMATION**

See R645-301-240.

R645-301-761. **GENERAL REQUIREMENTS**

See R645-301-240.

R645-301-762. **ROADS**

See R645-301-512.250.

R645-301-762.100. **RESTORING NATURAL DRAINAGE PATTERNS**

N/A

R645-301-762.200. **REGRADING**

See R645-301-532.200.

R645-301-763. **SILTATION STRUCTURES**

See Appendix R.

R645-301-763.100. RESTRICTIONS

See Appendix R.

R645-301-763.200. REQUIREMENTS

See Appendix R.

R645-301-764. STRUCTURE REMOVAL

See R645-301-240.

R645-301-765. PERMANENT CASING AND SEALING OF WELLS

N/A

GENERALIZED STRATIGRAPHIC SECTION
FOR THE
CENTRAL AND SOUTHERN PART
OF THE
WASATCH PLATEAU

(AFTER DOELLING, 1972 MONOGRAPH SERIES)

System	Stratigraphic Unit		Thickness (feet)	Description
Tertiary	WASATCH GROUP	North Horn Formation	500 - 2,500	Variegated shales with subordinate sandstone, conglomerate and fresh-water limestone, slope former; sandstone and limestone units may supply limited quantities of ground water.
Cretaceous	MESA VERDE GROUP	Price River Formation	600 - 1,000	Gray to white gritty sandstone interbedded with subordinate shale and conglomerate, ledge and slope former, little potential for ground water.
		Castlegate Sandstone (Unconformity)	150 - 500	White to gray, coarse-grained often conglomeratic sandstone, cliff former, weathers to shades of brown, good aquifer material, ground water not present if outcrops occur nearby.
		Blackhawk Formation MAJOR COAL SEAMS	700 - 1,000	Yellow to gray, fine-to-medium-grained sandstone, interbedded with subordinate gray and carbonaceous shale, several thick coal seams; perched ground water may occur in sandstone units, springs and seeps common.
		Star Point Sandstone	90 - 1,000	Yellow-gray massive cliff-forming sandstone, often in several tongues separated by Masuk Shale; ground water present, but generally a poor aquifer.
	MANCOS SHALE	Masuk Shale	300 - 1,300	Yellow to blue-gray sandy shale, slope former.
		Emery Sandstone COAL	50 - 800	Yellow-gray friable sandstone tongue, cliff former. Coal present in subsurface; major regional aquifer.
		Blue Gate Member	1,500- 2,400	Pale blue-gray, nodular and irregularly bedded marine mudstone and siltstone with several arenaceous beds, weathers into low rolling hills and badlands.
		Ferron Sandstone Member MAJOR COAL SEAMS	50 - 950	Alternating yellow-gray sandstone, sandy shale and gray shale with important coal beds of Emergy coal field, resistant cliff former; major regional aquifer.
		Tununk Shale Member	400 - 650	Blue-gray to black sandy marine shale slope forming mudston

Figure VII-1

ANDALEX RESOURCES, INC.

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 8, BONDING

CHAPTER 8

TABLE OF CONTENTS

R645-301-800.	BONDING AND INSURANCE	8-1
R645-301-810.	BONDING DEFINITIONS AND DIVISION RESPONSIBILITIES	8-2
R645-301-820.	REQUIREMENT TO FILE A BOND	8-2
R645-301-830.	DETERMINATION OF BOND AMOUNT	8-2
R645-301-840.	GENERAL TERMS AND CONDITIONS OF THE BOND	8-2
R645-301-850.	BONDING REQUIREMENTS FOR UNDERGROUND MINING OPERATIONS	8-2
R645-301-860.	FORMS OF BONDS	8-3
R645-301-870.	REPLACEMENT OF BONDS	8-3
R645-301-880.	REQUIREMENT TO RELEASE PERFORMANCE BONDS	8-3
R645-301-890.	TERMS AND CONDITIONS FOR LIABILITY INSURANCE	8-3

CHAPTER 8, BONDING

NOTE TO REVIEWERS: The Wildcat MRP was recently re-formatted to the newer R645 regulations. This reformatted MRP was recently approved and incorporated on May 17, 2006. The current amendment is referred to as the 2008 Modification Plan and consists of three components, namely; 1) addressing Division Order DO-04 regarding wind-blown fines, 2) expanding the primary coal storage pad by about 3.5 acres, and 3) provide for a new material storage area of about 6 acres located on the west side of the facility.

Because the Wildcat MRP was recently reformatted and approved, every effort has been made in this amendment to minimize text changes, as pertains to responses to specific regulations, except where necessary to avoid inconsistencies and contradictions, and to make the response germane to the inclusion of the 2008 Modification Plan. Where appropriate, response to individual regulations regarding the proposed 2008 Modification Plan amendment includes reference to Appendix S. This appendix contains a detailed description of the amendment and is presented in a narrative that integrates the various components which are normally addressed in the separate chapters. Within the chapters themselves, all new discussion relevant to the 2008 Modification Plan amendment is presented in italics to easily differentiate it from the previously approved and reformatted text. The submittal also utilizes the standard "redline/strike-out" to aid in the review.

R645-301-800. BONDING AND INSURANCE

Andalex Resources, Inc. currently holds a bond in the form of an irrevocable Letter of Credit, calculated and approved by the Division, in the amount of $651,000.00. This bond, and all supporting calculations, is included in this MRP in Appendix B, Part D. *Additional bonding associated with the 2008 Modification Plan will be posted after consultation with the Division.*

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

R645-301-810. BONDING DEFINITIONS AND DIVISION RESPONSIBILITIES

BY DIVISION

R645-301-820. REQUIREMENT TO FILE A BOND

Andalex currently holds a bond (irrevocable letter of credit), approved by UDOGM in the amount of $651,000.00 and it is included in this MRP in Appendix B, Part D.

See also Appendix B, Part D and Plates 8 & 9.

R645-301-830. DETERMINATION OF BOND AMOUNT

The bond amount has been determined through joint effort by Andalex Resources, Inc. and the Division. The present amount of bond is $1,144,000.00. Complete calculations are included in Appendix B, Part D. Bonded areas are shown on Plates *1A*, 9 *and 13C*, and further described in R645-301-542. *Additional bonding associated with the 2008 Modification Plan will be posted after consultation with the Division. The primary factors (other than inflation) used in determining the new bonding resulting from the 2008 Modification Plan are:*

1) The cut/fill earthwork volumes have increased from 74,000 cu. yds. to 80,000 cu. yds.

2) The area to be revegetated has increased from 60.94 acres to 81.79 acres.

3) There will be no new structures which will be required to be demolished.

R645-301-840. GENERAL TERMS AND CONDITIONS OF THE BOND

All pertinent bond information and details are included in Appendix B, Part D.

R645-301-850. BONDING REQUIREMENTS FOR UNDERGROUND MINING OPERATIONS

Appendix B, Part D

R645-301-860. FORMS OF BONDS

Appendix B - Letter of Credit

R645-301-860.200 COLLATERAL BONDS

Appendix B - Letter of Credit

R645-301-860.220 LETTERS OF CREDIT

Appendix B - Letter of Credit

(Note: All other sections of R645-301-860 except those noted are N/A).

R645-301-870. REPLACEMENT OF BONDS

N/A

R645-301-880. REQUIREMENT TO RELEASE PERFORMANCE BONDS

N/A -- UNTIL FINAL RECLAMATION

R645-301-890. TERMS AND CONDITIONS FOR LIABILITY INSURANCE

Required Liability Insurance Policy and information is included in Appendix B, Part C

VERIFICATION STATEMENT

STATE OF UTAH)
SS:
COUNTY OF CARBON)

I, David E Shaver, having been duly sworn, depose and attest that all of the representations contained in the foregoing application and true, accurate and complete to the best of my knowledge; that I am authorized to complete and file this application on behalf of the Applicant and this application has been executed as required by law.

Signed: David E Shaver

Taken, subscribed and sworn to me before the undersigned authority in my said county, this 8 day of May, 2009.

Notary Public: Tami L. Wardle

My Commission Expires: 03-07-2010

TAMI L WARDLE
NOTARY PUBLIC • STATE of UTAH
1323 SOUTH 600 WEST
PRICE UT 84501
MY COMMISSION EXPIRES: 03-07-2010

APPENDIX A
PART 1

OWNERSHIP AND CONTROL

APPENDIX A

OWNERSHIP AND CONTROL

Section 1

Insert
Family Tree

OWNERSHIP AND CONTROL

See Section 10
Murray Energy Corporation
(Affiliated Companies)

See Section 2
Murray Energy Corporation
Suite 111
29525 Chagrin Boulevard
Pepper Pike, OH 44122

See Section 3
UtahAmerican Energy, Inc.
P.O. Box 902
6750 North Airport Road
Price, UT 84501
ID # 34-1874726
(100% owned by Murray Energy Corporation)

Horse Canyon Reclamation, Part A
Lila Canyon Project, Part B (Pending)
C/007/013

See Section 4
Andalex Resources, Inc.
P.O. Box 902
6750 North Airport Road
Price, UT 84501
ID # 61-0931325
(100% owned by UtahAmerican Energy, Inc.)

See Section 9
Intermountain Power Agency
480 East 6400 South, Suite 200
Murray, UT 84107

Operating Agent

See Section 6
Andalex Resources Management, Inc.
P.O. Box 902
6750 North Airport Road
Price, UT 84501

(100% owned by UtahAmerican Energy, Inc.)

See Section 5
AMCA Coal Leasing, Inc.
P.O. Box 902
6750 North Airport Road
Price, UT 84501

(100% owned by UtahAmerican Energy, Inc.)

Tower Division
P.O. Box 902
6750 North Airport Road
Price, UT 84501

(100% owned by UtahAmerican Energy, Inc.)

Centennial Project
(Aberdeen Mine, Pinnacle Mine, Apex Mine)
C/007/019

Wildcat Loadout

C/007/033

Tenants in Common
(50% Ownership Each)

See Section 7
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501
ID # 87-0533099
(50% owned by Andalex Resources, Inc.)*
(Operated by Andalex Resources, Inc.)

Crandall Canyon Mine

C/015/032

See Section 8
West Ridge Resources, Inc.
P.O. Box 1077
Price, UT 84501
ID # 87-0585129
(50% owned by Andalex Resources, Inc.)*
(Operated by Andalex Resources, Inc.)

West Ridge Mine

C/007/041

* 50% undivided interest held by Intermountain Power Agency, a political subdivision of the State of Utah.

Section 2

MURRAY ENERGY CORPORATION
Suite 300
29325 Chagrin Boulevard
Pepper Pike, OH 44122

Appointment of Officers

		Begin	End
Robert E. Murray	Chairman, President &	02/23/01	
	Chief Executive Officer	02/23/01	
John R. Forrelli	Vice President	12/18/03	12/17/04
Robert D. Moore	Vice President &	12/17/04	
	Chief Financial Officer	04/23/07	
P. Bruce Hill	Vice President - Human Resources	12/18/03	
Michael D. Loiacono	Treasurer	02/23/01	
Michael D. Loiacono	Chief Financial Officer	12/20/05	04/23/07
Michael O. McKown	Secretary	02/23/01	

Incorporation Information:

State of Incorporation	Ohio; Charter No. 1211519
Date of Incorporation	February 23, 2001
ID# 34-1956752	

Shareholder:

	Begin	End
Murray Energy Holdings Co.	10/21/03 (100%)	
Robert E. Murray	2/23/01	10/21/03

Directors:

Robert E. Murray	02/23/01	
Michael D. Loiacono	12/20/05	04/23/07
Henry W. Fayne	01/28/05	
Richard L. Lawson	01/28/05	
Andrew D. Weissman	10/23/03	
Robert D. Moore	04/23/07	

Section 3

UTAHAMERICAN ENERGY, INC.
P.O. Box 902
6750 North Airport Road
Price, UT 84501

Officers:

		Begin	End
P. Bruce Hill	Chief Executive Officer	08/18/06	
P. Bruce Hill	President	12/16/06	
Douglas H. Smith	President	08/18/06	12/16/06
Clyde I. Borrell	President	07/31/98	05/19/06
Robert D. Moore	Treasurer	08/18/06	
Michael O. McKown	Secretary	08/18/06	
Marsha Baker Kocinski	Secretary	07/31/98	06/25/02
Barbara Boyce	Secretary	07/31/98	11/01/99
Jay Marshall	Manager	07/31/98	8/18/06

Directors:

Robert E. Murray	07/31/98
P. Bruce Hill	08/18/06

Owner:[1]

Murray Energy Corp.

[1] Coal Resources, Inc. is incorrectly listed as a shareholder the AVS OFT. Coal Resources, Inc has never been a shareholder of UEI.

Section 4

ANDALEX RESOURCES, INC.
P.O. Box 902
6750 North Airport Road
Price, UT 84501

Officers:

		Begin	End
P. Bruce Hill	President and Chief Executive Officer	12/16/06	
Douglas H. Smith	President	03/07/94	12/16/06
Robert D. Moore	Treasurer	08/18/06	
Michael O. McKown	Secretary	08/18/06	

Former Officers/Directors:

Peter B. Green	Director	01/05/98	08/18/06
Peter B. Green	CB	05/11/90	08/18/06
Peter B. Green	CEO	05/11/90	08/18/06
Ronald C. Beedie	Director	01/05/88	08/18/06
John Bradshaw	Secretary	02/05/90	08/18/06
John Bradshaw	Vice-President	02/05/90	08/18/06
Douglas H. Smith	Director	03/07/94	08/18/06
Samuel C. Quigley	Vice-President	02/24/95	08/18/06
Andalex Hungary Ltd.	Shareholder	12/28/20	08/18/06
Alexander Harold Samuel Green	Director	01/11/02	08/18/06

Directors:

Robert E. Murray	08/18/06
P. Bruce Hill	08/18/06

Owner:

UtahAmerican Energy, Inc.	100%	08/18/06

MSHA Numbers

Apex Mine	42-01750
Pinnacle Mine	42-01474
Aberdeen Mine	42-02028
Wildcat Loadout	42-01864

Section 5

AMCA COAL LEASING, INC.
P.O. Box 902
6750 North Airport Road
Price, UT 84501

Appointment of Officers:

		Begin	End
P. Bruce Hill	President and Chief Executive Officer	12/16/06	
Douglas H. Smith	President	08/18/06	12/16/06
Robert D. Moore	Treasurer	12/16/06	
Michael O. McKown	Secretary	12/16/06	

Directors:

Robert E. Murray	08/18/06
P. Bruce Hill	08/18/06

Owner:

UtahAmerican Energy, Inc., 100% ownership	08/18/06

Section 6

ANDALEX RESOURCES MANAGEMENT, INC.
P.O. Box 902
6750 North Airport Road
Price, UT 84501

Appointment of Officers:

		Begin	End
Douglas H. Smith	President	08/18/06	12/16/06
P. Bruce Hill	President and Chief Executive Officer	12/16/06	
Robert D. Moore	Treasurer	12/16/06	
Michael O. McKown	Secretary	12/16/06	

Directors:

Robert E. Murray		08/18/06
P. Bruce Hill		08/18/06

Shareholders:

UtahAmerican Energy, Inc.	100%	08/18/06

Section 7

GENWAL RESOURCES, INC.
P.O. Box 1077
Price, UT 84501

Officers:

		Begin	End
Douglas H. Smith	President	08/18/06	12/16/06
P. Bruce Hill	President and Chief Executive Officer	12/16/06	
Robert D. Moore	Treasurer	12/16/06	
Michael O. McKown	Secretary	12/16/06	

Directors:

Robert E. Murray	f	08/18/06
P. Bruce Hill		08/18/06

Former Directors:

Peter B. Green	8/9/06
Ronald C. Beedie	8/9/06
Douglas H. Smith	8/18/06
Gordon Ulrich	10/30/96

Former Officers:

Peter B. Green	Chairman & CEO	8/9/06
Samuel C. Quigley	Vice President	8/18/06
John Bradshaw	Vice President	5/17/05
John Bradshaw	Secretary & Treasurer	8/18/06
Douglas H. Smith	President	12/16/06

Owner:

ANDALEX Resources, Inc. is and remains the sole shareholder of Genwal Resources, Inc.[1]

MSHA Numbers

Crandall Canyon Mine 42-01715

[1] Intermountain Power Agency holds, as a tenant in common, an undivided 50% interest in certain real property interests regarding the Crandall Canyon Mine.

Section 8

WEST RIDGE RESOURCES, INC.[1]
P.O. Box 1077
Price, UT 84501

Officers:

		Begin	End
Douglas H. Smith	President	08/18/06	12/16/06
P. Bruce Hill	President and Chief Executive Officer	12/16/06	
Robert D. Moore	Treasurer	12/16/06	
Michael O. McKown	Secretary	12/16/06	

Directors:

Robert E. Murray	08/18/06
P. Bruce Hill	08/18/06

Owner:

Andalex Resources, Inc.[2] 100%

Former Directors[3]	Begin Date	End Date
Peter B. Green	4/1/98	8/9/06
Ronald C. Beedie	4/1/98	8/9/06
Douglas H. Smith	4/1/98	9/18/06

Former Officers[4]	Position	Begin Date	End Date
Peter B. Green	Chairman & CEO	4/15/98	8/9/06
Samuel C. Quigley	Vice President	4/15/98	8/18/06
John Bradshaw	Secretary	4/15/98	8/18/06
Douglas H. Smith	President	4/15/98	12/168/06

MSHA Number West Ridge Mine 42-022444

---

[1] WEST RIDGE Resources, Inc. ("WRRI") was formed on March 10, 1998. No actions of WRRI occurred before that date.

[2] ANDALEX Resources is (and remains) the sole shareholder of WRRI. WRRI and the Intermountain Power Agency hold certain real property interests as tenants in common, each owning a 50% interest therein.

[3] The initial directors of WRRI (as shown above) were appointed on April 1, 1998; the "Begin Date[s]" for each such director shown on the OFT form are incorrect.

[4] The initial officers of WRRI (as shown above) were appointed on April 15, 1998; the "Begin Date[s]" for each such officer shown on the OFT form are incorrect. Also, Christopher G. Van Bever never served as an officer of WRRI; the information shown on the OFT form to the contrary is incorrect.

Section 9

INTERMOUNTAIN POWER AGENCY
(Tenant in Common, 50% undivided interest; West Ridge Mine Permit C/007/041; Crandall Canyon Mine Permit C/015/032)[a]
10653 South River Front Parkway, Suite 120
South Jordan, Utah 84095
(801) 938-1333

Appointment of Officers:

Ray Farrell	Chairman	12/1998
R. Leon Bowler	Vice-Chairman	12/1984
Ted L. Olson	Secretary	01/2002
Russell F. Fjeldsted	Treasurer	03/2007

Directors:	Begin Date	End Date
R. Leon Bowler	06/1977	
Ray Farrell	11/1978	
Clifford C. Michaelis[b]	01/1988	6/2007
Ted L. Olson	01/1990	
Russell F. Fjeldsted	01/1992	
Walter Meacham	01/1999	
Gary O. Merrill	01/2002	6/2007
Robert O. Christiansen	06/2007	
Ed Collins	06/2007	

[a] Intermountain Power Agency holds, as a tenant in common, an undivided 50% interest in certain real property interests regarding the West Ridge Mine and the Crandall Canyon Mine.
[b] Replacing controller Dan R. Eldredge, serving from April 11, 1988 to January 1990.

Name and address of IPA's general manager:

Jim Hewlett
Intermountain Power Agency
10653 South River Front Parkway, Suite 120
South Jordan, Utah 84095
Telephone (801) 938-1333
Assumed position December 1, 2007

Resident Agent for IPA:

Mark Buchi
Holme, Roberts, and Owen
299 South Main, Suite 1800
Salt Lake City, Utah 84111
Assumed position January, 1988

IPA Designated representative to the Crandall Canyon Project and West Ridge Project Management Boards:

Aram Benyamin
Operating Agent
Los Angeles Department of Water & Power
111 North Hope Street, Room 1263
Los Angeles, California 90012-2694
Telephone (213) 367-0286

Principle Shareholders of IPA:

IPA has no shareholders. IPA is a political subdivision of the State of Utah created under the Interlocal Cooperation Act, Title II, Chapter 13, Utah Code Ann. 1953, as amended, and as such, has not issued stock.

Section 10

MURRAY ENERGY AFFILIATE COMPANIES

AMCOAL HOLDINGS, INC.
10/10/05-blr

Principal Office:
29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

101 Prosperous Place
Suite 125
Lexington, Kentucky 40509

Officers:

Robert E. Murray	President	5/23/03
P. Bruce Hill	Vice President – Human Resources	10/01/98
Robert D. Moore	Treasurer	10/01/98
Michael O. McKown	Secretary	3/1/05
Jeffrey L. Cash	Assistant Treasurer	11/01/99

Incorporation Information:

State of Incorporation: Ohio;
Charter No. 1007981

Date of Incorporation: June 12, 1998

ID #34-1867389

Shareholders: Murray Energy Corporation

Directors: Robert E. Murray

Revised 2/14/05

444680.1

THE AMERICAN COAL COMPANY

Principal Office:
29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

P. O. Box 727
Harrisburg, Illinois 62946

Officers:

Robert E. Murray	Acting President	11/02/02
John R. Forrelli	Vice President	9/07/04
Michael O. McKown	Vice President, General Counsel and Secretary	3/15/99 3/1/05
P. Bruce Hill	Vice President – Human Resources	10/01/98
Robert D. Moore	Treasurer	10/01/98
Jeffrey L. Cash	Assistant Treasurer and Assistant Secretary	11/01/99 6/01/01

Incorporation Information:

State of Incorporation	Delaware; Charter No. 2881631
Date of Incorporation	June 2, 1998
ID #73-1543124	
Shareholders:	AmCoal Holdings, Inc.
Directors:	Robert E. Murray

Revised: 2/14/05

444680.1

THE AMERICAN COAL SALES COMPANY

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Robert E. Murray	Chief Executive Officer	11/11/88	
B. J. Cornelius	President	9/08/95	
Edwin D. Lane	Vice President	11/01/99	3/1/05
William E. Hollars	Vice President	3/1/05	
Richard Rice	Vice President	11/11/88	11/01/99
Michael O. McKown	Secretary	3/1/05	
Steven C. Ellis	Secretary	11/10/88	3/1/05
James R. Turner, Jr.	Treasurer and Assistant Secretary	3/1/05	
Duane A. Smith	Assistant Treasurer and Assistant Secretary	6/25/01	
		6/25/01	
Brenda L. Murray	Assistant Secretary	9/8/95	6/25/01

Incorporation Information:

State of Incorporation: Ohio; Charter No. 727836

Date of Incorporation: June 29, 1988

ID #34-1603699

Shareholder: Coal Resources, Inc.

Directors: Robert E. Murray 9/08/95

Revised
5/2/07

444680.1

AMERICAN COMPLIANCE COAL, INC.

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Stanley T. Piasecki	President	3/1/05	
Charles E. Shestak	Vice President	03/10/03	
Michael O. McKown	Secretary	3/1/05	
Robert D. Moore	Treasurer and	6/25/01	
	Assistant Secretary	6/25/01	
Elmer A. Mottillo	Assistant Treasurer	8/22/03	

Former Officers:

Clyde I. Borrell	President	6/02/97	3/1/05
William W. Taft	Secretary	5/24/94	3/1/05

Incorporation Information:

State of Incorporation	Colorado; Charter No. 19941059260		
Date of Incorporation	May 24, 1994		
ID #34-1797161			

Shareholder:	Murray Energy Corporation (100%)	6/1/01	
	Robert E. Murray	5/24/94	2/23/01
Director:	Robert E. Murray	5/24/94	

Revised
5/2/07

444680.1

AMERICAN ENERGY CORPORATION

43521 Mayhugh Hill Road
Township Highway 88
Beallsville, Ohio 43716

Officers:

		Begin	End
Robert E. Murray	President	12/15/04	
Robert D. Moore	President	6/25/01	12/15/04
Michael O. McKown	Secretary	11/01/99	
James R. Turner, Jr.	Treasurer	3/1/05	
Robert D. Moore	Treasurer	6/25/01	12/15/04
Robert L. Putsock	Assistant Treasurer	1/27/04	

Incorporation Information:

State of Incorporation: Ohio;
Charter No. 00842695

Date of Incorporation: April 12, 1993
ID #31-1550443

Shareholder: Murray Energy Corporation
(100%)

Director:

Robert E. Murray	12/15/04	
P. Bruce Hill	7/02/01	12/15/04

Revised
3/16/07

444680.1

ANCHOR LONGWALL AND REBUILD, INC.

One Industrial Park Drive
Wheeling, West Virginia 26003

Officers:

		Begin	End
P. Bruce Hill	President and	2/16/99	11/10/06
	Assistant Secretary	2/16/99	
Chad Underkoffler	President	11/10/06	
Michael O. McKown	Secretary	11/01/99	
James R. Turner, Jr.	Treasurer	9/16/05	
Duane A. Smith	Assistant Secretary	11/01/99	

Incorporation Information:

State of Incorporation: West Virginia;
Charter No. 00961100093212818

Date of Incorporation: April 18, 1996

ID #55-0749933

Shareholder: Coal Resources, Inc.
I.D. # 34-1586390
Address: 29325 Chagrin
Boulevard
Suite 300
Pepper Pike, OH 44122

Director:

Charles E. Shestak	11/01/99
P. Keith McGilton	11/01/99

Revised
3/6/07

444680.1

AVONMORE RAIL LOADING, INC.

125 Old Farm Drive,
Pittsburgh, PA 15239

Officers:

P. Bruce Hill	President	6/25/01
Robert D. Moore	Treasurer	6/25/01
Michael O. McKown	Secretary	3/1/05
Robert L. Putsock	Assistant Treasurer	1/02/03
Elmer A. Mottillo	Assistant Secretary	1/02/03

Incorporation Information:

State of Incorporation	Delaware; Charter No. 0798860
Date of Incorporation Qualified	February 19, 1974 May 6, 1974 Pennsylvania; PA Entity #000302999

ID #25-1253970

Shareholder: Mill Creek Mining Company

Director: Charles E. Shestak

Revised: 2/14/05

444680.1

BELMONT COAL, INC.

P. O. Box 146
Powhatan, Ohio 43942

Officers:

		Begin	End
Robert D. Moore	President	6/25/01	
Maynard St. John	Vice-President	1/02/02	6/26/02
James R. Turner, Jr.	Secretary/Treasurer	9/16/05	
Kristi D. Brown	Secretary/Treasurer	11/08/01	9/16/05

Incorporation Information:

State of Incorporation	Ohio; Charter No. 00842697		
Date of Incorporation	April 12, 1993		
ID #31-1536602			

Shareholder:	Murray Energy Corporation (100%)	6/1/01	
	Robert E. Murray	4/19/93	6/1/01
Director:	Duane A. Smith	4/12/93	12/15/06
	Robert D. Moore	12/15/06	

Revised
3/6/07

444680.1

CANTERBURY COAL COMPANY

125 Old Farm Drive
Pittsburgh, PA 15239

Officers:

P. Bruce Hill	President and General Manager	6/25/01
Robert D. Moore	Secretary and Treasurer	6/25/01 6/25/01
Robert L. Putsock	Assistant Treasurer	1/02/03
Elmer A. Mottillo	Assistant Secretary	1/02/03

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #000055242
Date of Incorporation	July 26, 1963
ID #25-1127473	
Shareholder:	Mill Creek Mining Company (100%)
Director:	Charles E. Shestak

Revised
3/6/07

444680.1

COAL RESOURCES HOLDINGS CO.

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Robert E. Murray	President and CEO	6/27/03	
Michael D. Loiacono	Treasurer	6/27/03	
	CFO	12/20/05	04/23/07
Robert D. Moore	CFO	04/23/07	
Scott A. Boyle	Chief Financial Officer	10/29/05	12/20/05
P. Bruce Hill	Secretary	3/1/05	11/01/05
Michael O. McKown	Secretary	11/01/05	
Robert L. Putsock	Assistant Secretary and Assistant Treasurer	6/25/01 6/25/01	

Incorporation Information:

State of Incorporation: Delaware;
Charter No. 3676954

Date of Incorporation: June 27, 2003

ID #20-0100479

Shareholder: Robert E. Murray (Class A Shares 100%)
Robert Eugene Murray (Class B Shares 20%)
Robert Edward Murray (Class B Shares 20%)
Ryan Michael Murray (Class B Shares 20%)
Jonathan Robert Murray (Class B Shares 20%)
Fifth Third Bank of Northeast Ohio, Trustee (Class B Shares 20%)

Director: Robert E. Murray 6/27/03

Revised
5/10/07

444680.1

COAL RESOURCES, INC.

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Robert E. Murray	Chairman, President and Chief Executive Officer	3/1/05	
Michael D. Loiacono	Treasurer	1/28/05	
	CFO	12/20/05	04/23/07
Robert D. Moore	CFO	04/23/07	
Scott A. Boyle	Chief Financial Officer	10/17/05	12/20/05
P. Bruce Hill	Secretary	3/1/05	11/01/05
Michael O. McKown	Secretary	11/01/05	
Robert L. Putsock	Assistant Secretary and Assistant Treasurer	6/25/01 6/25/01	

Incorporation Information:

State of Incorporation: Ohio;
Charter No. 717546

Date of Incorporation: January 29, 1988

ID #34-1586390

Shareholder:	Coal Resources Holdings Co.	10/21/03	
	Robert E. Murray	1/29/88	10/21/03
Directors:	Robert E. Murray		
	Henry W. Fayne		
	Andrew Weissman		
	Richard L. Lawson		
	Michael D. Loiacono	12/20/05	04/23/07
	Robert D. Moore	04/23/07	

Revised
5/10/07

444680.1

CONSOLIDATED LAND COMPANY

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

Robert D. Moore	President	8/11/04
Robert D. Moore	Treasurer and	6/25/01
	Assistant Secretary	6/25/01
Michael O. McKown	Secretary	3/1/05
Elmer A. Mottillo	Assistant Secretary	8/22/03

Incorporation Information:

State of Incorporation	Ohio; Charter No. 00842696
Date of Incorporation	April 12, 1993
ID #34-1769562	

Shareholder:	Murray Energy Corporation (100%)	6/1/01
Director:	Robert D. Moore	8/11/04

Revised
3/6/07

444680.1

ENERGY RESOURCES, INC.

P. O. Box 259
R. D.#2, Fermantown Road
Brockway, PA 15824

Officers:

Stanley T. Piasecki	President and Chief Executive Officer	8/11/04
Elmer A. Mottillo	Treasurer	8/22/03
Michael O. McKown	Secretary	3/1/05
Charles E. Shestak	Assistant Secretary	4/30/93

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #762734
Date of Incorporation	September 14, 1982
ID #31-1044044	

Shareholder:	Mill Creek Mining Company	
Director:	Stanley T. Piasecki	8/11/04

Revised 2/14/05

444680.1

THE HOCKING VALLEY RESOURCES COMPANY

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

P. Bruce Hill	President	3/1/05
Michael D. Loiacono	Secretary and Treasurer	4/05/93

Incorporation Information:

State of Incorporation	Ohio; Charter No. 755531
Date of Incorporation	August 25, 1989
ID #34-1635301	

Shareholder:	Ohio Valley Resources, Inc.	
Director:	Robert E. Murray	4/05/93

Revised
3/6/07

KENAMERICAN RESOURCES, INC.

101 Prosperous Place
Suite 125
Lexington, Kentucky 40509

Officers:

		Begin	End
Robert N. Sandidge	President	12/16/06	
Dennis W. Bryant	President/Manager	10/1/05	12/16/06
B. J. Cornellius	Senior Vice-President--Sales	11/1/05	
James R. Turner, Jr.	Treasurer	3/1/05	
Robert D. Moore	Assistant Treasurer	3/1/05	
Michael O. McKown	Secretary	2/13/06	

Incorporation Information:

State of Incorporation: Kentucky;
Charter No. 0331655

Date of Incorporation: June 9, 1994

ID #61-1264385

Shareholder: Mill Creek Mining Company

Director: Robert E. Murray 6/1/05

Revised
3/6/07

444680.1

MAPLE CREEK MINING, INC.

Principal Office:
29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

981 Route 917
Bentleyville, Pennsylvania 15314

Officers:

		Begin	End
Paul B. Piccolini	President	4/28/06	
Ronnie D. Dietz	Vice President and Treasurer	3/1/05	
Michael B. Gardner	Secretary	3/1/05	5/01/07
VACANT			
Roberta K. Heil	Assistant Secretary	11/01/99	

Incorporation Information:

State of Incorporation: Pennsylvania;
PA Entity #2607113

Date of Incorporation: November 9, 1994

ID #25-1755305

Shareholder: Sunburst Resources, Inc. 1/11/95

Director: Robert E. Murray

MILL CREEK MINING COMPANY

P. O. Box 259
R. D. #2, Fermantown Road
Brockway, PA 15824

Officers:

		Begin	End
Charles E. Shestak	President	8/18/98	
James R. Turner, Jr.	Treasurer	3/1/05	
Robert D. Moore	Treasurer	6/25/01	3/1/05
Robert D. Moore	Assistant Treasurer	3/1/05	
Michael O. McKown	Secretary	3/1/05	
Michael E. Elliott	Secretary	8-18-98	3/1/05
Robert L. Putsock	Assistant Secretary and	6/25/01	
	Assistant Treasurer	6/25/01	

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #0007447787
Date of Incorporation	December 1, 1981
Certificate of Amendment	July 7, 1988; #8854525
ID #31-1040986	

Shareholder:	Coal Resources, Inc.	
Director:	Robert E. Murray	5/14/04

Revised
3/6/07

444680.1

MONVALLEY TRANSPORTATION CENTER, INC.

P. O. Box 135
1060 Ohio Avenue
Glassport, Pennsylvania 15045

Officers:

Paul B. Piccolini	President	4/28/06
James R. Turner, Jr.	Secretary and Treasurer	3/1/05

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #856918
Date of Incorporation	February 15, 1985
ID #25-1490495	

Shareholders:	Pennsylvania Transloading, Inc.	
Directors:	Robert E. Murray and Michael D. Loiacono	11/01/99

444680.1

MURRAY ENERGY CORPORATION

29325 Chagrin Boulevard, Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Robert E. Murray	Chairman, President, &	02/23/01	
	Chief Executive Officer	02/23/01	
John R. Forrelli	Vice President	12/18/03	12/17/04
Robert D. Moore	Vice President &	12/17/04	
	Chief Financial Officer	04/23/07	
P. Bruce Hill	Vice President/Human Resources	12/18/03	
Michael D. Loiacono	Treasurer	02/23/01	
	Chief Financial Officer	12/20/05	04/23/07
Robert D. Moore	CFO	04/23/07	
Michael O. McKown	Secretary	02/23/01	

Incorporation Information:

State of Incorporation	Ohio; Charter No. 1211519
Date of Incorporation	February 23, 2001
ID #34-1956752	

Shareholder:	Robert E. Murray	02/23/01	10/21/03
	Murray Energy Holdings Co.	10/21/03	
	100%		
Directors:	Robert E. Murray	02/23/01	
	Michael D. Loiacono	01/28/05	04/23/07
	Henry W. Fayne	01/28/05	
	Richard L. Lawson	01/28/05	
	Andrew D. Weissman	10/23/03	
	Robert D. Moore	04/23/07	

Revised 5/10/07

444680.1

MURRAY ENERGY HOLDINGS CO.

29325 Chagrin Boulevard, Suite 300
Pepper Pike, Ohio 44122

Officers:

Robert E. Murray	President & CEO	6/30/03	11/29/05
Scott Boyle	President & CEO	11/29/05	12/20/05
Michael D. Loiacono	President & CEO	1/10/05	4/23/07
Robert D. Moore	President & CEO	4/23/07	
Michael D. Loiacono	Treasurer	1/10/05	
		6/30/03	
Michael O. McKown	Secretary	6/30/03	

Incorporation Information:

State of Incorporation	Delaware; Charter No. 3676958
Date of Incorporation	June 27, 2003
ID #	20-0100463

Shareholders:

Robert Eugene Murray
Robert Edward Murray
Jonathan Robert Murray
Ryan Michael Murray
Fifth Third Bank of
Northeast Ohio, Trustee

Directors:

Robert E. Murray	6/30/03	
Michael D. Loiacono	6/30/03	4/23/07
Michael O. McKown	6/30/03	
Robert D. Moore	423/07	

OHIOAMERICAN ENERGY INCORPORATED

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

D. Michael Jamison	President	5/1/05
Michael O. McKown	Secretary	5/1/05
Robert D. Moore	Treasurer	5/1/05
Elmer A. Mottillo	Assistant Treasurer	6/30/06

Incorporation Information:

State of Incorporation	Ohio	
Date of Incorporation	February 1, 2005	
ID # 20-3044610	Ohio Charter No. 1518533	
Director:	Robert E. Murray	5/1/05
Shareholder:	Murray Energy Corporation	5/1/05

Revised
3/6/07

444680.1

THE OHIO VALLEY COAL COMPANY

Principal Office:
56854 Pleasant Ridge Road
Alledonia, Ohio 43901

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Vacant	President	11/4/05	
Paul B. Piccolini	Vice President	1/1/07	
Ronnie D. Dietz	Treasurer, Assistant Secretary and Corporate Comptroller	3/1/05	
Michael B. Gardner	Secretary	3/1/05	5/01/07
Roberta K. Heil	Assistant Secretary	11/01/99	
Bonnie M. Froehlich	Assistant Secretary and	6/25/01	
	Assistant Treasurer	6/25/01	

Incorporation Information:

State of Incorporation: Ohio;
Charter No. 384971

Date of Incorporation: June 6, 1969

Certificate of Amendment: October 4, 1988;
#201274

ID #34-1041310

Shareholder: Ohio Valley Resources, Inc.

Director: Robert E. Murray

Revised
5/2/07

OHIO VALLEY RESOURCES, INC.

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Paul B. Piccolini	President	4/28/06	
John Forrelli	President	11/1/99	4/28/06
Ronnie D. Dietz	Treasurer, Assistant Secretary and Corporate Comptroller	3/1/05	
Michael D. Loiacono	Treasurer, Assistant Secretary and Corporate Comptroller	3/10/95	4/28/06
VACANT	Secretary	3/1/05	05/01/07
Stephen Ellis	Secretary	3/10/95	3/1/05

Incorporation Information:

State of Incorporation: Ohio;
Charter No. 721514

Date of Incorporation: March 29, 1988

ID #34-1586391

Shareholders:			
	Murray Energy Corporation (100%)	6/1/01	
	Robert E. Murray	3/10/95	6/1/01

Director: Robert E. Murray

Revised
3/6/07

444680.1

THE OHIO VALLEY TRANSLOADING COMPANY

56854 Pleasant Ridge Road
Alledonia, Ohio 43902

Officers:

		Begin	End
Vacant	President	11/4/05	
Paul B. Piccolini	Vice-President	1/1/07	
Ronnie D. Dietz	Treasurer, Assistant Secretary and Corporate Comptroller	3/1/05	
Michael B. Gardner	Secretary	3/1/05	05/01/07
Roberta K. Heil	Assistant Secretary	9/01/00	

Incorporation Information:

State of Incorporation	Ohio; Charter No. 727835
Date of Incorporation	June 29, 1988
ID #34-1611209	

Shareholder:	Ohio Valley Resources, Inc.	
Director:	Robert E. Murray	4/06/93

Revised
3/6/07

THE OKLAHOMA COAL COMPANY

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Paul B. Piccolini	President	4/28/06	
Gregory C. Smith	President	11/1/99	4/28/06
Michael O. McKown	Secretary	3/1/05	
Gregory A. Gorospe	Secretary	9/15/94	11/1/99
James R. Turner, Jr.	Treasurer and Assistant Secretary	3/1/05	
Kathleen Bednarek	Treasurer	6/20/00	6/26/00
Robert L. Putsock	Assistant Secretary	1/10/03	
Kathleen Bednarek	Assistant Secretary	9/3/96	6/26/00

Incorporation Information:

State of Incorporation	Oklahoma; Charter No. DB00477836
Date of Incorporation	April 17, 1989
Licensed in Ohio	February 27, 1991; FL 790739
ID #34-1673480	
Shareholder:	The American Coal Sales Company
Director:	Robert E. Murray

Revised
3/6/07

444680.1

ONEIDA COAL COMPANY, INC.

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Robert D. Moore	President and	06/25/01	
	Treasurer	11/01/99	
Robert L. Putsock	Assistant Secretary	06/25/01	
Michael O. McKown	Secretary	03/1/05	

Former Officers:

John Blaine Earles	Vice-President	2/28/92	7/2/93
Tivis Arnold Graybeal	Secretary	2/28/92	4/28/94
Anthony Carl Laplaca	Secretary	4/28/94	11/1/99
Joseph R. Bourgo	Vice-President	9/1/92	10/20/00
Joseph R. Bourgo	Treasurer	4/28/94	10/20/00
Norma Jean Mccourt	Assistant Secretary	4/28/94	11/1/99

Incorporation Information:

State of Incorporation	West Virginia; Charter No. 00000020004097TAX		
Date of Incorporation	August 29, 1983		
ID #62-1011712			
Shareholder:	West Virginia Resources, Inc. (100%)	2/28/92	
Daryl Napier			02/28/92
Director:	Robert E. Murray		

Revised 5/2/07

444680.1

PENNAMERICAN COAL, INC.

125 Old Farm Drive
Pittsburgh, PA 15239

Officers:

P. Bruce Hill	President	6/25/01
Robert D. Moore	Treasurer and	6/25/01
	Secretary	6/25/01
Robert L. Putsock	Assistant Secretary	6/25/01

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #2545905
Date of Incorporation	September 13, 1993
ID #25-1722115	

Shareholder:	Mill Creek Mining Co.	11/08/93
Director:	Robert E. Murray	

Revised 2/14/05

444680.1

PENNAMERICAN COAL LP

125 Old Farm Drive
Pittsburgh, PA 15239

Partners:

Pinski Corp.	Managing Partner	8/19/96
PennAmerican Coal, Inc.	Limited Partner	7/8/98

EIN# 25-1800809
Partnership Effective 7/8/98

Revised
3/6/07

444680.1

PENNSYLVANIA TRANSLOADING, INC.

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

Paul B. Piccolini	President	4/28/06
James R. Turner, Jr.	Treasurer	3/1/05
Michael O. McKown	Secretary	3/1/05

Incorporation Information:

State of Incorporation	Ohio; Charter No. 736747
Date of Incorporation	November 18, 1988
Qualified:	Pennsylvania; December 28, 1988
Certificate of Authority	No. 8898868
ID #34-1603748	

Shareholder:	Sunburst Resources, Inc. (100%)[1]	04/01/96
Director:	Robert E. Murray	

Revised
5/10/07

[1] Sunburst Resources, Inc. has always been a shareholder and has no relation to Consolidated Land Company.

PINSKI CORP.

125 Old Farm Drive
Pittsburgh, PA 15239

Officers:

P. Bruce Hill	President and General Manager	9/05/00
Robert D. Moore	Treasurer and Secretary	6/25/01 6/25/01
Robert L. Putsock	Assistant Treasurer and Assistant Secretary	6/25/01 6/25/01

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #002710766
Date of Incorporation	August 19, 1996
ID #25-1800870	

Shareholder:	PennAmerican Coal, Inc.
Director:	Charles E. Shestak

Revised 2/14/05

SPRING CHURCH COAL COMPANY

125 Old Farm Drive
Pittsburgh, PA 15239

Officers:

P. Bruce Hill	President	6/25/01
Robert D. Moore	Secretary and Treasurer	6/25/01 6/25/01
Robert L. Putsock	Assistant Treasurer	1/02/03
Elmer A. Mottillo	Assistant Secretary	1/02/03

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #000696663
Date of Incorporation	November 2, 1979
ID #25-1372128	

Shareholder:	Mill Creek Mining Company
Director:	Charles E. Shestak

Revised: 2/14/05

SUNBURST RESOURCES, INC.

586 National Road
Wheeling, West Virginia 26003

Officers:

		Begin	End
Paul B. Piccolini	President	4/28/06	
Ronnie D. Dietz	Treasurer	3/1/05	
Michael B. Gardner	Secretary	3/1/05	05/01/07

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #2616384	
Date of Incorporation	January 10, 1995	
ID #25-1766427		
Shareholder:	Ohio Valley Resources, Inc.	4/01/97
Director:	Robert E. Murray	

Revised
3/7/07

444680.1

TDK COAL SALES, INCORPORATED

P. O. Box 259
R. D. #2, Fermantown Road
Brockway, PA 15824

Officers:

Stanley T. Piasecki	President and Chief Executive Officer	8/11/04
Elmer A. Mottillo	Treasurer	8/22/03
Michael O. McKown	Secretary	3/1/05
Charles E. Shestak	Assistant Secretary	2/01/99

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #00758582
Date of Incorporation	June 28, 1982
ID #25-1422374	

Shareholder:	Energy Resources, Inc.	
Director:	Stanley T. Piasecki	8/11/04

Revised: 02/14/05

444680.1

UMCO ENERGY, INC.

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

		Begin	End
Paul B. Piccolini	President	4/28/06	
Ronnie D. Dietz	Treasurer and Assistant Secretary	3/1/05	
Michael B. Gardner	Secretary Vice-President	3/1/05 5/3/06	05/01/07

Incorporation Information:

State of Incorporation	Pennsylvania; PA Entity #1072295
Date of Incorporation	December 29, 1988
ID #52-1615668	
Shareholder:	Maple Creek Mining, Inc. and Toni J. Southern
Director:	Robert E. Murray

Revised
3/6/07

444680.1

UTAHAMERICAN ENERGY, INC.

P.O. Box 902
6750 North Airport Road
Price, Utah 84501

Officers:

		Begin	End
P. Bruce Hill	Chief Executive Officer	8/18/06	
P. Bruce Hill	President	12/16/06	
Douglas H. Smith	President	8/18/06	12/16/06
Clyde I. Borrell	President	7/31/98	5/19/06
Robert D. Moore	Treasurer	8/18/06	
Michael O. McKown	Secretary	8/18/06	
Marsha Baker Kocinski	Secretary	7/31/98	6/25/02
Barbara Boyce	Secretary	7/31/98	11/01/99
Jay Marshall	Manager	7/31/98	8/18/06

Incorporation Information:

State of Incorporation: Utah;
Charter No. 212673

Date of Incorporation: July 30, 1998

ID #34-1874726

Shareholders: Murray Energy Corporation
(100%)

Directors:

Robert E. Murray	7/31/98
P. Bruce Hill	8/18/06

Revised
5/2/07

WEST VIRGINIA RESOURCES, INC.

953 National Road
Suite 207
Wheeling, West Virginia 26003

Officers:

		Begin	End
Neil Kok	President	10/2/06	
Robert D. Moore	President	10/20/00	10/20/00
Robert E. Murray	President, CEO	12/27/91	10/20/00
Anne Besece	Treasurer and Secretary	10/2/06	
Robert L. Putsock	Treasurer and	6/25/01	10/2/06
	Assistant Secretary	6/25/01	
Robert E. Murray	Treasurer	12/27/91	6/25/01
Michael O. McKown	Secretary	3/1/05	10/2/06
Anthony Carl Laplaca	Secretary	12/27/91	3/1/05

Incorporation Information:

State of Incorporation: West Virginia;
Charter No.
00913610154813604

Date of Incorporation: December 27, 1991

ID #55-0713676

Shareholder: Mill Creek Mining Company (100%) 12/27/91

Director: Robert E. Murray

Revised
3/6/07

444680.1

WYAMERICAN ENERGY, INC.

29325 Chagrin Boulevard
Suite 300
Pepper Pike, Ohio 44122

Officers:

Robert D. Moore	President, Treasurer and Secretary	5/3/06

Incorporation Information:

State of Incorporation	Wyoming; Charter No. 1998003378171
Date of Incorporation	September 22, 1998
ID #34-1875051	

Shareholder:	Murray Energy Corporation
Director:	Robert E. Murray

Revised
3/7/07

444680.1

APPENDIX A
PART 2

CURRENT AND PREVIOUS
COAL MINING PERMITS

Current and Previous Coal Mining Permits

Company	Andalex Resources, Inc.		EIN: 61-0931325		Wildcat Loadout
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
Andalex Resources, Inc. P.O. Box 902 Price, Utah 84501	007/033	Utah	DOGM	42-01864	
				1211-UT-09-01864-01	

Company	Andalex Resources, Inc.		EIN: 61-0931325		Centennial Project
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
Andalex Resources, Inc. P.O. Box 902 Price, Utah 84501	007/019	Utah	DOGM	42-01474	
				42-01750	
				42-02028	

Company	Genwal Resources, Inc.		EIN: 87-0533099		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
Genwal Resources, Inc. P.O. Box 1077 Price, Utah 84501	015/032	Utah	DOGM	42-01715	Nov. 21, 1991
				42-02356	

Company	**West Ridge Resources, Inc.**		EIN: **87-0585129**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
West Ridge Resources, Inc. P.O. Box 1077 Price, Utah 84501	007/091	Utah	DOGM	42-02233	March 12, 1999

Company	**Belmont Coal, Inc.**		EIN: **31-153-6602**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
Belmont Coal, Inc. Box 156 30799 PineTree Road Pepper Pike, Ohio 44124	D-0241	Ohio	ODNR	33-04397	7-31-97
	D-1020	Ohio	ODNR	33-03048	7-2-93
Company	**KenAmerican Resources Inc.**		EIN: **61-1264385**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
KenAmerican Resources Inc. 1008 South Broadway Lexington Kentucky 40504	889-5009	KY	DSMRK	1517606	10-25-94
Company	**Onieda Coal Company Inc.**		EIN: **62-1011712**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
Onedia Coal Co. Inc., 29525 Chagrin Boulevard, Suite 111 Pepper Pike, Ohio 44122	U0-359	WV	DEP	46-05243	2-20-92
	U0-524	WV	DEP	46-06043	2-28-92
	U0-620	WV	DEP	46-06213	2-28-92
	D-7-82	WV	DEP	46-06557	2-28-92

	D-47-81	WV	DEP	46-06557	2-28-92
	D-46-82	WV	DEP	46-06522	2-28-92
	U-2016-89	WV	DEP	46-07757	2-28-92
	P-154-81	WV	DEP	N/A	N/A
	P-62-81	WV	DEP	N/A	N/A
	P-2043-89	WV	DEP	N/A	N/A
	S-2004-87	WV	DEP	46-06766	2-28-92
	S-71-85	WV	DEP	46-06766	2-28-92
Company	**MonValley Transportation Center Inc.**		EIN: **62-1011712**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
MonValley Trans Center Inc. P.O. Box 135 1060 Ohio Avenue Glassort, PA 15045	02851602	PA	DEP	N/A	N/A
Company	**Oklahoma Coal Co.**		EIN: **34-1673480**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
The Oklahoma Coal Co. Suite 111, 29525 Chagrin Blvd Pepper Pike, Ohio 44122	D-0230	OH	DOR	N/A	N/A
Company	**Maple Creek Mining Inc.,**		EIN: **25-1755305**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
Maple Creek Mining Inc. 981 Route 917 Bentleyville, Pa 15314	63841302	PA	PA DEP	36-00970	1970
	63733706	PA	PA DEP	1211-PA20-0058-03	1970
	63723707	PA	PA DEP	1211-PA20-0058-04	1970

Company	**Energy Resources, Inc.**		EIN: **25-1755305**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
Energy Resources Inc. P.O. Box 259 Brockway, PA 15824	33840125	PA	DEP	36-02695	5-25-88
	33860102	PA	DEP	36-02695	5-25-88
	17880102	PA	DEP	36-02695	5-25-88
	33870113	PA	DEP	36-02695	5-25-88
	33830115	PA	DEP	36-02695	5-25-88
	24880101	PA	DEP	36-02695	5-25-88
	24880103	PA	DEP	36-02695	5-25-88
	24890108	PA	DEP	36-02695	5-25-88
	24900102	PA	DEP	36-02695	5-25-88
	24900104	PA	DEP	36-02695	5-25-88
	24900103	PA	DEP	36-02695	5-25-88
	24890101	PA	DEP	36-02695	5-25-88
	24890102	PA	DEP	36-02695	5-25-88
	24960101	PA	DEP	36-02695	5-25-88
Company	**Canterbury Coal Company**		EIN: **25-112473**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
Canterbury Coal Company R.D. No. 1, Box 119 Avonmore, PA 15618	SMP # 039000112	PA	DEP	3600813	N/A
	SMP # 03940111	PA	DEP	3605708	N/A
	CMAP 03841302	PA	DEP	N/A	N/A
	CRDA 03743701	PA	DEP	N/A	N/A
	CRDA 03950701	PA	DEP	N/A	N/A

Company	**The Ohio Valley Coal Company**		EIN: **34-1041310**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
The Ohio Valley Coal Company 56854 Pleasant Ridge Road Alledonia, OH 43902	D-3060	OH	ODNR	33-01159	25-May-88

Company	**UMCO Energy, Inc.**		EIN: **52-1615668**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
UMCO Energy, Inc. 29525 Chagrin Boulevard, Suite 111 Pepper Pike, OH 44122	63-921301	PA	DEP	N/A	N/A

Company	**The American Coal Company**		EIN: **73-1543124**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
The American Coal Company P.O. Box 727 Harrisburg, IL 62946	No. 2	IL	IDNR	11-02752	N/A
	No. 255	IL	IDNR	N/A	N/A
	No. 257	IL	IDNR	N/A	N/A
	No. 306	IL	IDNR	N/A	N/A
	No. 165804AAA	IL	IDNR	N/A	N/A
	No. 110061727	IL	IDNR	N/A	N/A

Company	**PennAmerican Coal, L.P.**		EIN: **25-1800809**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
PennAmerican Coal, L.P. R.D. No. 1, Box 119A Avonmore, PA 15618	32951301	PA	MCM	36-00970	

Company	**UtahAmerican Energy, Inc.**		EIN: **34-1874726**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
UtahAmerican Energy, Inc. P.O. Box 986 Price, Utah 84501	ACT/ 007- 013	Utah	Division of Oil, Gas and Mining	42-00100	12/24/78
				42-02241	04/05/99

Company	**American Energy, Corporation**		EIN: **31-1550443**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
American Energy Corp. 43521 Mayhugh Hill Road Township Highway 88 Beallsville, Ohio 43716	D-0425	Ohio	ODNR	33-01070	
	D-1159	Ohio	ODNR		

Company	**TDK Coal Sales, Inc.**		EIN: **25-1422374**		
Address:	Permit #	State	Regulator Authority	MSHA #	Date Issued
TDK Coal Sales, Inc. P.O. Box 259 R.D. #2, Fermantown Road Brockway, PA. 15824	16910104	PA	PaDep	3608867	
	33960109	PA	PaDep		
	24970104	PA	PaDep		

FEDERAL

PERMIT
Permit Number C/007/0033

May 5, 2004

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 West North Temple, Suite 1210
P. O. Box 145801
Salt Lake City, Utah 84114-5801
(801) 538-5340

This permit, C/007/0033, is issued for the state of Utah by the Utah Division of Oil, Gas and Mining (Division) to:

Andalex Resources Incorporated
P.O. Box 902
Price, Utah 84501
(801) 637-5385

for the Wildcat Loadout Facility. Andalex Resources, Inc. is the leasee of Bureau of Land Management Rights of Way (ROW) No. U48027 and U52810. A surety bond is filed with the Division in the amount of $651,000, payable to the State of Utah, Division of Oil, Gas and Mining and the Office of Surface Mining, Reclamation and Enforcement (OSMRE). The Division must receive a copy of this permit signed and dated by the permittee.

Sec. 1 **STATUTES AND REGULATIONS** - This permit is issued pursuant to the Utah Coal Mining and Reclamation Act of 1979, Utah Code Annotated (UCA) 40-10-1 et seq, hereafter referred to as the Act.

Sec. 2 **PERMIT AREA** - The permittee is authorized to conduct coal mining and reclamation operations on the following described lands within the permit area at the Wildcat Loadout Facility situated in the State of Utah, Carbon County, and located in:

Salt Lake Base and Meridian, Utah Township 13 South, Range 9 East, Section 33, NW1/4SE1/4, N1/2SW1/4SE1/4, E1/2E1/2NE1/4SW1/4, E1/2NE1/4SE1/4SW1/4, NE1/4SE1/4SE1/4SW1/4, NW1/4SW1/4SW1/4SE1/4, E1/2SE1/4SW1/4NE1/4 and portions of N1/2NW1/4NE1/4SE1/4, NE1/4SW1/4NE1/4, SW1/4SW1/4NE1/4, NW1/4SE1/4SW1/4NE1/4, W1/2NE1/4SW1/4, W1/2E1/2NE1/4SW1/4, W1/2E1/2SE1/4SW1/4.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

This legal description is for the permit area of the Wildcat Loadout Facility. The permitee is authorized to conduct coal mining and reclamation operations and related surface activities on the foregoing described property subject to the conditions of the Bureau of Land Management rights-of-way and all other applicable conditions, laws and regulations.

Sec. 3 **COMPLIANCE** - The permittee will comply with the terms and conditions of the permit, all applicable performance standards and requirements of the State Program.

Sec. 4 **PERMIT TERM** - This permit expires on May 5, 2009.

Sec. 5 **ASSIGNMENT OF PERMIT RIGHTS** - The permit rights may not be transferred, assigned or sold without the approval of the Division Director. Transfer, assignment or sale of permit rights must be done in accordance with applicable regulations, including but not limited to 30 CFR 740.13{e} and R645-303-300.

Sec. 6 **RIGHT OF ENTRY** - The permittee shall allow the authorized representative of the Division, including but not limited to inspectors, and representatives of the Office of Surface Mining Reclamation and Enforcement (OSM), without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay to:

(a) have the rights of entry provided for in 30 CFR 840.12, R645-400-220, 30 CFR 842.13 and R645-400-110;

(b) be accompanied by private persons for the purpose of conducting an inspection in accordance with R645-400-100 and R645-400-200 when the inspection is in response to an alleged violation reported to the Division by the private person.

Sec. 7 **SCOPE OF OPERATIONS** - The permittee shall conduct coal mining and reclamation operations only on those lands specifically designated as within the permit area on the maps submitted in the approved plan and approved for the term of the permit and which are subject to the performance bond.

Sec. 8 **ENVIRONMENTAL IMPACTS** - The permittee shall take all possible steps to minimize any adverse impact to the environment or public health and safety resulting from noncompliance with any term or condition of the permit, including, but not limited to:

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

(a) any accelerated or additional monitoring necessary to determine the nature of noncompliance and the results of the noncompliance;

(b) immediate implementation of measures necessary to comply; and

(c) warning, as soon as possible after learning of such noncompliance, any person whose health and safety is in imminent danger due to the noncompliance.

Sec. 9 **CONDUCT OF OPERATIONS** – The permitee shall conduct it's operations:

(a) in accordance with the terms of the permit to prevent significant, imminent environmental harm to the health and safety of the public; and

(b) utilizing methods specified as conditions of the permit by the Division in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program and the Federal Lands Program.

Sec. 10 **DISPOSAL OF POLLUTANTS** – The permittee shall dispose of solids, sludge, filter backwash or pollutants in the course of treatment or control of waters or emissions to the air in the manner required by the approved Utah State Program and the Federal Lands Program which prevents violation of any applicable state or federal law.

Sec. 11 **EXISTING STRUCTURES** - As applicable, the permittee will comply with R645-301 and R645-302 for compliance, modification, or abandonment of existing structures.

Sec. 12 **RECLAMATION FEE PAYMENTS** - The operator shall pay all reclamation fees required by 30 CFR Part 870 for coal produced under the permit, for sale, transfer or use.

Sec. 13 **AUTHORIZED AGENT** - The permittee shall provide the names, addresses and telephone numbers of persons responsible for operations under the permit to whom notices and orders are to be delivered.

Sec. 14 **COMPLIANCE WITH OTHER LAWS** - The permittee shall comply with the provisions of the Water Pollution Control Act (33 USC 1151 et seq,) and the Clean Air Act (42 USC 7401 et seq), UCA 26-11-1 et seq, and UCA 26-13-1 et seq.

Sec. 15 **PERMIT RENEWAL** - Upon expiration, this permit may be renewed for areas

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

within the boundaries of the existing permit in accordance with the Act, the approved Utah State Program and the Federal Lands Program.

Sec. 16 **CULTURAL RESOURCES** - If, during the course of coal mining and reclamation operations, previously unidentified cultural resources are discovered, the permittee shall ensure that the site(s) is not disturbed and shall notify the Division. The Division, after coordination with OSM, shall inform the permittee of necessary actions required. The permittee shall implement the mitigation measures required by the Division within the time frame specified by the Division.

Sec. 17 **APPEALS** - The permittee shall have the right to appeal as provided for under R645-300-200.

Sec. 18 **SPECIAL CONDITIONS** - There is a special condition associated with this permitting actions as described in Attachment A.

INCORPORATED
MAY 17 2004
Div. of Oil, Gas & Mining

The above conditions (Secs. 1-18) are also imposed upon the permittee's agents and employees. The failure or refusal of any of these persons to comply with these conditions shall be deemed a failure of the permittee to comply with the terms of this permit and the lease. The permittee shall require his agents, contractors and subcontractors involved in activities concerning this permit to include these conditions in the contracts between and among them. These conditions may be revised or amended, in writing, by the mutual consent of the Division and the permittee at any time to adjust to changed conditions or to correct an oversight. The Division may amend these conditions at any time without the consent of the permittee in order to make them consistent with any federal or state statutes and any regulations.

THE STATE OF UTAH

By: Jamie L Bray

Date: 5/6/04

I certify that I have read, understand and accept the requirements of this permit and any special conditions attached.

Authorized Representative of the Permittee

Date: 05/10/04

INCORPORATED
MAY 17 2004
Div. of Oil, Gas & Mining

Attachment A

SPECIAL CONDITION

1. Andalex Resources, Inc. must submit water quality data for the Wildcat Loadout Facility in an electronic format through the Electronic Data Input web site, http://hlunix.hl.state.ut.us/cgi-bin/appx-ogm.cgi.

INCORPORATED

MAY 17 2005

Div. of Oil, Gas & Mining

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Carbon,)

I, Ken Larson, on oath, say that I am the Publisher of the Sun Advocate, a twice-weekly newspaper of general circulation, published at Price, State a true copy of which is hereto attached, was published in the full issue of such newspaper for 4 (Four) consecutive issues, and that the first publication was on the 5th day of February, 2004, and that the last publication of such notice was in the issue of such newspaper dated the 24th day of February, 2004.

Ken G. Larson

Ken G Larson - Publisher

Subscribed and sworn to before me this 24th day of February, 2004.

Linda Thayn

Notary Public My commission expires January 10, 2007 Residing at Price, Utah

Publication fee, $299.52

LINDA THAYN
NOTARY PUBLIC - STATE of UTAH
645 EAST MAIN
PRICE, UTAH 84501
COMM. EXPIRES 1-10-2007

NOTICE

ANDALEX Resources, Inc., P.O. Box 902, Price, Utah 84501, has filed application [illegible] for its Wildcat Loadout Mine to the Utah Division of Oil, Gas and Mining. The permit area is located within B.L.M. Right-of-Way U-48027 on the "Standardville" U.S. Geological Survey 7.5 minute quadrangle map, and is further described as follows:

Salt Lake Base and Meridian, Utah Township 13 South, Range 9 East, Section 33. NW1/4SE1/4, N1/2 SW1/4 SE1/4, E1/2E1/2NE 1/4SW1/4, E1/2NE1/4SE1/4SW1/4, NE1/4SE1/4SE1/4SE1/4SW 1/4, NW1/4SW1/4SW1/4SE1/4, E1/2SE1/4SW1/4NE1/4 and portions of N1/2NW1/4NE1/4SE1/4, NE1/4SW1/4NE1/4, SW1/4SW 1/4NE1/4, NW1/4SE1/4SW1/4NE1/4 W1/2NE1/4SW1/4, W1/2E 1/2NE1/4SW1/4, W1/2E1/2SE1/4SW1/4.

In addition, there is a parcel of land 500 feet by 500 feet square whose southeast corner is located 990 feet east of the center of section 33.

Copies of this application and the permit are available for inspection at the Utah Division of Oil, Gas and Mining office, 1594 West North Temple, Suite 1210, Salt Lake City, Utah and at the Carbon County Courthouse, Main Street, Price, Utah.

Written comments, objections or requests for informal conferences on the application should be addressed to: Utah Coal Program, Department of Natural Resources, Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, P.O. Box 145801, Salt Lake City, Utah 84114-5801.

Published in the Sun Advocate February 5, 10, 17 and 24, 2004.

RECEIVED

MAY 0 5 2004

DIV. OF OIL, GAS & MINING

INCORPORATED

MAY 17 2004

Div. of Oil, Gas & Mining

State of Utah

Department of Natural Resources

ROBERT L. MORGAN
Executive Director

Division of Oil, Gas & Mining

LOWELL P. BRAXTON
Division Director

OLENE S. WALKER
Governor

GAYLE F. McKEACHNIE
Lieutenant Governor

May 4, 2004

TO: Compliance File

FROM: Pamela Grubaugh-Littig, Permit Supervisor pgl

RE: Compliance Review for Section 510c Findings, Andalex Resources, Inc., Wildcat Loadout Facility, C/007/0033

As of the writing of this memo, there are no NOV's or CO's which are not corrected or in the process of being corrected. There are no finalized Civil Penalties which are outstanding and overdue in the name of Andalex Resources, Inc. Andalex Resources, Inc. does not have a demonstrated pattern of willful violations, nor have they been subject to any bond forfeitures for any operation in the state of Utah.

Attached is the findings evaluation from the Applicant Violator System (AVS), dated May 4, 2004. No violations were retrieved from AVS.

Attachment: (OSM-AVS Recommendation)
O:\007033.WCL\Compliance\2004\RENEWAVS050404.DOC

JO 5/6/04

1594 West North Temple, Suite 1210, PO Box 145801, Salt Lake City, UT 84114-5801
telephone (801) 538-5340 • facsimile (801) 359-3940 • TTY (801) 538-7458 • www.ogm.utah.gov

Utah!
Where ideas connect™
INCORPORATED
MAY 17 2004

RECLAMATION AGREEMENT

12. In the event of forfeiture, the Operator shall be liable for additional costs in excess of the bond amount which are required to comply with this Agreement. Any excess monies resulting from the forfeiture of the bond amount upon compliance with this contract shall be refunded to the appropriate party.

13. Each signatory below represents that he/she is authorized to execute this Agreement on behalf of the named party. Proof of such authorization is provided on a form acceptable to the Division and is attached hereto.

SO AGREED this 5 day of MAY, 19 89

STATE OF UTAH:

Dianne R. Nielson

Dianne R. Nielson, Director
Division of Oil, Gas and Mining

OPERATOR:

Company Officer - Position
Robert Anderson, Jr. - President

Company Officer - Position
Bruce Justin Ferriell - Secretary

NOTE: An Affidavit of Qualification must be completed and attached to this form for each authorized agent or officer. Where one signs by virtue of Power of Attorney for a company, such Power of Attorney must be filed with this Agreement. If the principal is a corporation, the Agreement shall be executed by its duly authorized officer.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

August 1988
Exhibit "B" - BONDING AGREEMENT
COLLATERAL BOND

Permit Number PRO 007/033
Expiration Date _____

(FEDERAL COAL)
COLLATERAL BOND
--ooOOoo--

The OPERATOR has provided a(n) Letter of Credit (FORM OF COLLATERAL) issued by Pittsburgh National Bank (INSTITUTION) which names the DIVISION as Beneficiary. This collateral, attached as Exhibit "B-1", is by this reference incorporated herein, and shall secure the RECLAMATION AGREEMENT. This undersigned OPERATOR and INSTITUTION hereby jointly and severally bind ourselves, our heirs, administrators, executors, successors and assigns unto the State of Utah, Division of Oil, Gas and Mining, and, the U.S. Department of Interior, Office of Surface Mining Reclamation and Enforcement (OSMRE) in the penal sum of ($ 813,795.00) (COLLATERAL BOND AMOUNT) for the timely performance of reclamation responsibilities of the SURFACE DISTURBANCE described in Exhibit "A" of this RECLAMATION AGREEMENT.

Terms for release or adjustment of this COLLATERAL BOND are as written and agreed to by the DIVISION and the OPERATOR in the RECLAMATION AGREEMENT to which this COLLATERAL BOND has been attached as Exhibit "B".

If the COLLATERAL hereinabove describes real property, then this bond shall be filed as a restrictive covenant, upon said property and shall run with the land.

INCORPORATED
MAY 17 2000
Div. of Oil, Gas & Mining

August 1988
Exhibit "B" - BONDING AGREEMENT
COLLATERAL BOND

So agreed this 5th day of May, 19 89.

FOR THE OPERATOR:

Andalex Resources, Inc.
Operator - (Company)

Company Officer - Position
Robert Anderson, Jr. President

Company Officer - Position
Bruce Justin Ferriell - Secretary

FOR THE INSTITUTION:

(Bank or Agency)

Asst. Vice President
Officer - Position

ACCEPTED BY THE STATE OF UTAH:

Director, Division of Oil, Gas and Mining

NOTE: An Affidavit of Qualification must be completed and attached to this form for each authorized agent or officer. Where one signs by virtue of Power of Attorney for a company, such Power of Attorney must be filed with this Agreement. If the principal is a corporation, the Agreement shall be executed by its duly authorized officer.

The sole obligation of Institution will be to honor its commitment to the Division under the Institution's Letter of Credit No. 55412-IC dated 3-1-89.

INCORPORATED
MAY 17 2000
Div. of Oil, Gas & Mining

AFFIDAVITS OF QUALIFICATION

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

INCUMBENCY AND SIGNATURE CERTIFICATE

I, Bruce Justin Ferriell, Secretary of ANDALEX RESOURCES, INC., a Delaware corporation, hereby certify that Robert Anderson, Jr. is the duly elected, qualified, and acting President of the Corporation, and that the signature set forth opposite his name is his signature:

Name	Office	Signature
Robert Anderson, Jr.	President	

IN WITNESS WHEREOF, I have hereunto signed my name this 22nd day of February, 1989.

Secretary

I, Robert Anderson, Jr., President of ANDALEX RESOURCES, INC., a Delaware corporation, hereby certify that Bruce Justin Ferriell is the duly elected, qualified, and acting Secretary of the Corporation and that the signature set forth above is his signature.

IN WITNESS WHEREOF, I have hereunto signed my name this 22nd day of February, 1989.

President

STATE OF KENTUCKY
COUNTY OF JEFFERSON

The foregoing INCUMBENCY AND SIGNATURE CERTIFICATE was aknowledged before me by Robert Anderson, Jr. and Bruce Justin Ferriell, respectively the President and Secretary of ANDALEX RESOURCES, INC., by and on behalf of the Corporation this 22nd day of February, 1989.

My commission expires: June 17, 1991

Notary Public

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

LEASE

THIS LEASE, made and entered into as of the 1st day of December, 1981 between UTAH RAILWAY COMPANY, a Utah corporation, mailing address: 1770 University Club Building, 136 East South Temple, Salt Lake City, Utah 84111 hereinafter called "Lessor," and TOWER RESOURCES, INC., a Delaware corporation, mailing address: P.O. Box 1027, Price, Utah 84501, hereinafter called "Lessee," WITNESSETH, that:

Section 1. Grant and Description. Lessor, in consideration of the rents to be paid and the agreements to be performed by Lessee, hereby leases to Lessee premises situate in the County of Carbon, State of Utah (hereinafter "leased premises,") to-wit:

> Two strips of land of the Lessor in the vicinity of Section 33, Township 13 South, Range 9 East, SLB&M in Carbon County, Utah, being 92.5 feet on each side of a strip of land which is 15 feet wide being 7-1/2 feet on either side of the centerline of Lessor's mainline track extending from a point opposite Mile Post 776 plus 47 feet to a point opposite Mile Post 829 plus 99 feet as shown on the map attached hereto as Exhibit "A" and containing approximately 22.73 acres, more or less. The leased premises does not include a strip of land 15 feet wide down the centerline of Lessor's mainline track.

Section 2. Term. To have and to hold the leased premises from December 1, 1981 to November 30, 1982, and so long thereafter as Lessee shall use the leased premises for the purposes hereinafter specified or until such time as this agreement shall be terminated as hereinafter provided; provided, however, that Lessee shall ship no less than 100,000 tons of coal per annum originating at Wildcat, Utah, over the Utah Railway.

Section 3. Rental. Lessee agrees to pay to Lessor a rental of Four Thousand and no/100 Dollars ($4,000.00) per annum, payable annually in advance.

Section 4. Purposes. Lessee's use of the leased premises shall be for the construction and maintenance of private trackage and coal loading facilities in order to ship coal over the Utah Railway, together with any and all other purposes related thereto. It is understood that Railroad may use the Leased Premises for any and all purposes when the Leased Premises is not required for use by Tower, provided that such use by Railroad will not interfere with or cause delay in the loading of coal by Tower at any time or in any manner.

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

Section 5. Improvements. Lessee may construct improvements upon the leased premises consistent with the purposes of this lease, provided, however, that prior to the construction of such improvements Lessee shall provide to Lessor a site plat depicting the nature of such improvements together with notice of the anticipated date of commencement of such construction, and provided further that Lessee shall not proceed with construction of such improvements until the site plan has been approved in writing by Lessor. All improvements constructed by Lessee on the leased premises shall, during the continuance of this lease, be maintained by the Lessee in a state of good repair and shall be deemed to be attached to the land. All improvements other than trackage hereafter constructed by Lessee upon the leased premises shall be deemed to be the property of the Lessor, subject to the condition hereinafter stated; provided, however, that if at the termination hereof Lessee shall have fully paid the rent herein reserved and shall in all other respects have faithfully kept, observed and performed the agreements hereof, then such improvements on said leased premises as may have been purchased by Lessee or erected or placed upon the leased premises by the Lessee, other than trackage hereafter constructed by Lessee, shall upon such termination become the property of the Lessee and said Lessee may, within sixty (60) days after termination of this lease, remove at Lessee's sole expense such improvements other than trackage on said leased premises as may have been purchased by Lessee or erected or placed upon said premises by said Lessee and restore said premises to substantially their former state in accordance with the provisions of Section 21 hereof, but if Lessee shall be in default upon the termination of this lease, then such improvements on said leased premises as may have been purchased by Lessee or erected or placed upon the leased premises by Lessee, shall remain the exclusive property of the Lessor.

Section 6. Charges and Taxes. Lessee shall pay all charges for electricity, gas and water used by Lessee on the leased premises. Lessee also agrees to pay, or cause to be paid, before the same shall become delinquent, all taxes and assessments of every nature that may be levied or assessed upon any buildings or improvements erected or placed on the leased premises by the Lessee. In the event the taxing authorities shall fail or refuse to assess such buildings or improvements in the name of the Lessee, or shall render tax statements for the land and the buildings and improvements in the name of the Lessor, then the Lessor may pay the said taxes and assessments before the same become delinquent, in which event the Lessee agrees to reimburse the Lessor for the full amount of such taxes and assessments levied and paid with respect to such buildings and improvements within thirty days after receipt of a bill therefor.

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

Section 7. Fire Insurance. During the continuance of this lease Lessee will cause any policies of fire insurance on the fixtures, structures and improvements upon the leased premises and the contents thereof to be so written that in the event of the loss thereof or damage thereto by fire, no insurance company shall be subrogated to the right of the Lessee or shall have recourse against Lessor for such loss or damage.

Section 8. Care of Premises. Lessee agrees at all times to keep the leased premises in a safe, clean and sanitary condition and free and clear of all debris and inflammable material which might tend to increase the risk of fire or give the premises an untidy appearance.

Section 9. Damage to Improvements. In the event any building or other improvements upon the leased premises purchased by the Lessee or constructed or erected by the Lessee on the leased premises is damaged or destroyed by fire, storm or other casualty the Lessee shall within thirty (30) days after such happening remove all debris and rubbish therefrom and if Lessee fails so to do, Lessor may enter the leased premises and remove such debris and rubbish and the Lessee agrees to reimburse the Lessor within thirty (30) days after bill rendered for the expense so incurred.

Section 10. Liens. The Lessee shall pay for all materials joined or affixed to the leased premises and shall pay in full all persons who perform labor upon said leased premises and shall not permit or suffer any mechanic's or materialman's lien of any kind or nature to be enforced against the leased premises for any work done or materials furnished thereon at the instance or request or on behalf of the Lessee, and the Lessee agrees to indemnify and hold harmless the Lessor from and against any and all liens, claims, demands, costs, court costs, attorney fees and expenses of whatsoever nature, in any way connected with or growing out of such work done, labor performed, or materials furnished.

Section 11. Laws and Regulations. Lessee agrees, without cost to Lessor, to comply with all laws, rules, regulations and ordinances affecting said premises.

Section 12. Clearances. Lessee covenants and agrees not to pile or permit any material whatsoever, or erect, or permit to be erected, any structure, appliance or obstacle nearer than six (6) feet to the nearest rail in any track, except by and with the written consent of the Lessor, except that Lessee may operate, at Lessee's sole risk, loading and unloading devices

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

extending into cars adjacent to said premises, provided that said devices, when not in use, shall be removed from the cars to a location not nearer than six (6) feet to the nearest rail in any track. Notwithstanding the provisions of Section 17 hereof, Lessee shall and will at all times indemnify and save harmless the Lessor, of, from and against any and all damages, remote as well as proximate, in anywise resulting from any non-performance and non-observance of the covenant and agreement herein contained, for which the Lessor shall become, in whole or in part, liable to be charged, and neither the Lessor's knowledge or notice of any such non-performance and non-observance, nor its failure to notify its own employees thereof, nor its continued operation of any said track, shall be in anywise deemed a waiver of the foregoing covenant of indemnity or to relieve the Lessee therefrom.

Section 13. Inflammables. Except by and with the written consent of the Lessor, the premises shall not be used for loading, unloading or storage of explosive, dangerous or inflammable substances, oil, gasoline, volatile liquids, chlorine, or liquified petroleum gas, and, when with the written consent of the Lessor, either under Section 4 hereof or otherwise the premises are so used, Lessee agrees to comply with all regulations and specifications prescribed in Association of American Railroad circulars respecting same.

Section 14. Artificial Lighting. Artificial lighting in pump houses, warehouses, or other enclosures where oil or other inflammable fluid supplies are handled or stored, except when in unbroken original containers, shall be by electricity, and all electrical installations on such premises shall conform to and be maintained in accordance with the "National Electrical Code," and in accordance with the recommendations for such locations as are embodied in the National Electrical Safety Code, and also in accordance with requirements of any local ordinance or state or federal laws which may be in effect during the term of this lease.

Section 15. Right of Inspection. The leased premises shall be open at all reasonable times for inspection by the Lessor's authorized representatives.

Section 16. Liability for Breach. The Lessee shall be liable for any and all injury or damage to persons or property of whatsoever nature or kind arising out of or contributed to by any breach, in whole or in part, of any covenant of this agreement by the Lessee.

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

Section 17. Indemnity. This Lessee shall indemnify and hold harmless the Lessor from and against any and all liability, loss, damage, claims, demands, actions, causes of action, costs and expense of whatsoever nature growing out of injury to or death of persons whomsoever including without limiting the generality of the foregoing, the officers, agents, servants and employees of the parties hereto, or the loss or destruction of or damage to property whatsoever of persons whomsoever, including the parties hereto, and their employees, when such injury, death, loss, destruction or damage occurs on the leased premises or results from or arises in any way in connection with, or incident to the occupation or use, including ingress and egress of the leased premises by, or the presence thereon of, the Lessee, the Lessee's officers, agents, servants, employees, patrons, licensees, or invitees, except when caused solely by the negligence of the Lessor.

Section 18. Termination. Notwithstanding anything to the contrary herein contained, it is further agreed that if Lessee shall no longer have need of the leased premises for the purposes herein provided, then, Lessee may terminate this lease at any time upon giving Lessor (30) days written notice of such termination. Notice of termination may be served in accordance with provisions of Section 20 hereof. Rent shall be paid by Lessee to date of termination fixed by said notice; and if rent has been paid in advance the proportionate amount for the unexpired term shall be returned to the Lessee. Lessor may terminate the lease upon giving Lessee (60) days written notice that breach and/or forfeiture has occurred as provided in Section 19 hereof.

Section 19. Default. It is further agreed that the breach of any covenants, stipulations or conditions herein contained to be kept and performed by the Lessee shall, at the option of the Lessor, upon sixty (60) days written notice to Lessee, forthwith cause a termination of this lease and all rights of the Lessee, hereunder unless prior to the end of such sixty (60) day period Lessee has corrected such breach to the satisfaction of Lessor, or if such breach cannot be cured within such time period Lessee has commenced diligent efforts to cure such breach and continues such efforts until the breach is cured, all to the satisfaction of Lessor. After lapse of the period following notification of termination, or declaration of forfeiture, the Lessor may at once re-enter upon the leased premises and repossess itself thereof and remove all persons therefrom or may pursue an action of forcible entry and detainer, or to pursue any and all other rights and remedies available at law to recover the premises. A waiver by the Lessor of the breach by the Lessee of any covenant or condition of this Lease shall not impair the

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

right of the Lessor to avail itself of any subsequent breach thereof.

Should default by either party in any of the conditions or covenants contained herein require legal action by the other party, the party ultimately found to be in default agrees to pay all cost and expense of said action including but not limited to court costs and attorneys fees.

Section 20. Notice. Any notice given hereunder shall be deemed to be properly served if the same shall be hand delivered, or if mailed postpaid, addressed to the party at the address specified herein or to such other address as may be established by written notice.

Section 21. Vacation of Premises. The Lessee covenants and agrees to vacate and surrender the quiet and peaceable possession of the leased premises upon the termination of this lease. Within sixty (60) days after such termination the Lessee, subject to the provisions of Section 5 hereof, shall (a) remove from the leased premises at the expense of the Lessee all improvements, structures and other property, not belonging to the Lessor, and (b) restore the surface of the ground to as good condition as the same was in before such structures were erected, including among other things the removal of foundations of such structures, the filling in of all excavations and pits, and the removal of all debris and rubbish, all at the Lessee's expense; failing in which the Lessor may perform the work and the Lessee shall reimburse the Lessor for the cost thereof within thirty (30) days after bill rendered.

In case of Lessee's failure to remove said improvements, structures and other property as provided for in this Section 21, the same shall upon the expiration of said sixty (60) days after the termination of this lease become and thereafter remain the property of the Lessor, and if after the expiration of such sixty-day period the Lessor elects to and does remove or cause to be removed said improvements, structures and other property from the leased premises and the market value thereof on removal or of the material therefrom does not equal the cost of such removal, plus the cost of restoring the surface of the ground as aforesaid, then the Lessee shall reimburse the Lessor for the deficit within thirty (30) days after bill rendered.

Whenever for any reason this lease shall be terminated, the Lessee shall have thirty (30) days after such termination to vacate the leased premises and to remove all property owned or in the possession or custody of the Lessee as provided in Section 5

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

hereof. Provided, however, that the Lessee shall continue to pay the rental heretofore specified, and all liability provisions shall remain in effect until such time as the Lessee actually vacates the leased premises and removes therefrom all of the Lessee's property including all property belonging to third persons within the custody or possession of the Lessee.

Section 22. Assignment and Subletting. The Lessee agrees not to sublet said premises or any part thereof, or assign this lease or any interest therein, except by and with the written consent of the Lessor which shall not be unreasonably withheld.

Section 23. Successors. Subject to the provisions of Section 22 hereof, this lease shall be binding upon the heirs, executors, administrators, successors and assigns of the parties hereto.

Section 24. Eminent Domain. If the premises hereby leased, in whole or such part as is necessary for continuation of Lessee's operations is taken under the power of eminent domain, then this lease shall terminate automatically at the instant of such taking, and the Lessor shall receive all compensation for such condemnation except for the contributory value of the improvements owned by the Lessee. Lessee agrees to hold harmless the Lessor, from and against any and all liability, loss, damages, claims, demands, action, causes of action, and expenses of whatsoever nature growing out of or incident to the termination of this lease.

Section 25. Waiver. Acceptance of rental payment by the Lessor from the Lessee after any default by the Lessee or after termination or expiration of the lease, or after the serving of any notice, or after the commencement of any suit or after final judgment for possession of said property, shall not waive such default or reinstate, continue or extend the terms of the lease or affect any such notice or suit, as the case may be.

Section 26. Other Agreements. Lessor represents that its rights with respect to the leased premises are adequate to allow it to convey the interest granted herein to Lessee. Except as provided in Section 27, this lease represents the entire agreement between the parties hereto and there are no collateral oral agreements or understandings. Any executory agreement hereafter made shall be ineffective to change, modify, or discharge this lease in whole or in part unless such executing agreement is in writing and signed by the parties hereto.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

Section 27. Main Line Rail. The parties acknowledge that the centerline of Lessor's main line rail track runs within 7-1/2 feet on each side of the leased premises. Concurrently with the execution of this lease the parties have executed an Agreement with respect to the crossing of such main line track by Lessee with a 60-inch overhead conveyor system and appurtenances. Except as provided in such Agreement, Lessee shall not have the right pursuant to this lease to cross said main line track. In no event shall Lessee interfere with Lessor's operations thereon. Lessor hereby reserves unto itself the right to operate and maintain said main line track during the term of this lease together with the right to construct, operate and maintain such additions to said main line as Lessor, in its sole discretion deems necessary and/or appropriate; provided, however, that Lessor shall make payment to Lessee of the actual cost of repair to Lessee's improvements which may be caused by Lessor's actions with respect to such main line track.

IN WITNESS WHEREOF, the parties have executed this lease in duplicate the day and year first above written.

ATTEST:

Secretary

UTAH RAILWAY COMPANY

By _____
Its: President

ATTEST:

Asst. Secretary

TOWER RESOURCES, INC.

By _____
Its: President

STATE OF UTAH)
) ss.
COUNTY OF _____)

On the 16 day of November, 1981, personally appeared before me O.K. Curtis who, being by me duly sworn, did say that he is the President of UTAH RAILWAY COMPANY, a corporation, and that the foregoing instrument was signed on behalf of said corporation by authority of its

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

Bylaws or a resolution of its Board of Directors, and said O.K. Curtis ~~and~~ _____ acknowleded to me that said corporation executed the same.

H. L. Letzerich
NOTARY PUBLIC
Residing at: Salt Lake

My Commission Expires:

Nov. 1, 1983

STATE OF ~~UTAH~~ Kentucky)
) ss.
COUNTY OF Jefferson)

On the 9th day of ~~November,~~ December 1981, personally appeared before me Robert Anderson Jr. who, being by me duly sworn, did say that he is the President of TOWER RESOURCES, INC., a corporation, and that the foregoing instrument was signed on behalf of said corporation by authority of its Bylaws or a resolution of its Board of Directors, and said Robert Anderson Jr and Frank E. Rogers acknowleded to me that said corporation executed the same.

Deborah A. Schlieck
NOTARY PUBLIC
Residing at: Louisville Ky

My Commission Expires:

3-31-85

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

AMENDMENT TO LEASE

This Amendment to Lease, entered into and effective this 8th day of February, 1983, by and between UTAH RAILWAY COMPANY, a Utah corporation, mailing address: 1770 University Club Building, 136 East South Temple, Salt Lake City, Utah 84111, hereinafter called "Lessor", and TOWER RESOURCES, INC., a Delaware corporation, mailing address: P.O. Box 1027, Price, Utah 84501, hereinafter called "Lessee".

W I T N E S S E T H:

In consideration of the sum of Ten Dollars ($10.00) and the mutual convenants and promises stated herein, the Railway and Tower agree as follows:

1. This Amendment to Lease hereby amends that certain lease dated December 1, 1981, between UTAH RAILWAY COMPANY, identified as "Lessor" and TOWER RESOURCES, INC., identified as "Lessee" covering certain premises in Carbon County, Utah.

The parties agree that Section 1 of said Lease shall be amended to read as follows:

Section 1: Grant and Description. Lessor, in consideration of the rents to be paid and the agreements to be performed by Lessee, hereby leases to Lessee premises situate in the County of Carbon, State of Utah (hereinafter "leased premises"), to wit:

> Two strips of land of the Lessor in the vicinity of Sections 27, 28, and 33, Township 13 South, Range 9 East, SLB&M and Sections 4 and 5, Township 14 South, Range 9 East, SLB&M in Carbon County, Utah, being 92.5 feet on each side of a strip of land which is 15 feet wide being 7-1/2 feet on either side of the center line of Lessor's main line track extending from a point opposite Mile Post 7 plus 2444 feet (7.4629) to a point opposite Mile Post 5 plus 2114 feet (5.4004), but excluding a strip of land 50 feet wide on either side of

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

Mile Post 5 plus 4575 feet (5.8665), such exclusion to be reserved for a possible future road crossing of the tracks. The lands affected are shown on the map attached hereto as Exhibit A-2 and contains approximately 45.83 acres, more or less. The leased premises does not include a strip of land 15 feet wide down the centerline of Lessor's main line track.

2. The lessor hereby ratifies and confirms the above described Lease as being in full force and effect in accordance with its terms and conditions.

3. Except as hereinabove specifically modified and changed, all of the terms and conditions of the subject Lease Agreement shall continue in full force and effect.

IN WITNESS WHEREOF, the parties have executed this Agreement to Lease the day and year first above written.

LESSOR

By: _____
Utah Railway Company
Executive Vice President

ATTEST:

_____

LESSEE

By: _____
Tower Resources, Inc.

ATTEST:

_____

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

AMENDED TRACKAGE AGREEMENT

This Amended Trackage Agreement, made and entered into this 8th day of February, 1983 by and between UTAH RAILWAY COMPANY, a Utah corporation, mailing address: 1770 University Club Building, 136 East South Temple, Salt Lake City, Utah 84111, hereinafter called "Railroad", party of the first part, and TOWER RESOURCES, INC., a Delaware corporation, mailing address: P.O. Box 1027, Price, Utah 84501, hereinafter called "Tower".

W I T N E S S E T H:

In consideration of the sum of Ten Dollars ($10.00) and the mutual convenants and promises stated herein, the "Railroad" and "Tower" agree as follows:

This Amended Trackage Agreement hereby amends that certain Trackage Agreement dated December 1, 1981, by and between UTAH RAILWAY COMPANY, herein identified as "Railroad" and TOWER RESOURCES, INC., herein identified as "Tower" covering certain proposed rehabilitation, refurbishing, and new construction of track at Wildcat Spur in Carbon County, Utah, State of Utah.

The parties agree that Trackage Agreement shall be amended to read as follows:

WHEREAS, Tower desires to rehabilitate and refurbish existing side trackage of Railroad, and to construct certain new trackage, hereinafter collectively called "Track" at Wildcat Spur in Carbon County, State of Utah, at the location shown on the map attached hereto as Exhibit A-2, and by this reference made a part hereof, and conduct operations thereupon, all in accordance with the terms and conditions hereinafter set forth;

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

NOW, THEREFORE, it is agreed by and between the parties hereto as follows:

1. Lands Affected. The lands on which the Track is to be constructed are situated in the County of Carbon, State of Utah and are more particularly described as follows:

(a) Two strips of land of the Lessor in the vicinity of Sections 27, 28, and 33, Township 13 South, Range 9 East, SLB&M and Sections 4 and 5, Township 14 South, Range 9 East, SLB&M in Carbon County, Utah, being 92.5 feet on each side of a strip of land which is 15 feet wide being 7-1/2 feet on either side of the center line of Lessor's main line track extending from a point opposite Mile Post 7 plus 2444 feet (7.4629) to a point opposite Mile Post 5 plus 2114 feet (5.4004), but excluding a strip of land 50 feet wide on either side of Mile Post 5 plus 4575 feet (5.8665), such exclusion to be reserved for a possible future road crossing of the tracks. The lands affected are shown on the map attached hereto as Exhibit A-2 and contains approximately 45.83 acres, more or less. The leased premises does not include a strip of land 15 feet wide down the centerline of Lessor's main line track.

Said lands (hereinafter "Leased Premises") are concurrently being leased to Tower pursuant to a Lease dated December 1, 1981, between the parties. This Trackage Agreement shall govern the ownership of a new side trackage constructed by Tower, and the Use of the Track on the Leased Premises other than Railroad Company's Main Line Track and the Lease shall govern the ownership and use of the Leased Premises.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

2. Track. The Track to be rehabilitated, refurbished, constructed, operated and maintained pursuant to this Trackage Agreement is more particularly described as follows:

(a) All existing side trackage within the Leased Premises of Lessor including, but not limited to, the side track (approximately 3,000 feet long from point of switch to point of switch) and a secondary side track (approximately 1,190 feet long from point of switch to point of switch) both of which are located parallel to the main line track and are depicted on Exhibit A-2.

(b) Tower to furnish all materials and labor and construct an additional amount of new trackage consisting of approximately 10,890 feet of standard gauge railroad track including one turnout, to be constructed adjacent to, and compatible with the existing main line track.

3. Construction and Division of Cost. Tower shall rehabilitate and refurbish existing side trackage and furnish all materials and labor relating thereto. Tower shall construct, at the expense of Tower, subject to payment by Railroad as hereinafter provided, all of the additional 10,890 feet of new trackage to be located on the Leased Premises.

4. Payment. Upon completion of the rehabilitation, refurbishment and construction of the Track, Tower shall provide to Railroad a complete accounting of all costs incurred in connection with the rehabilitation, refurbishment and construction of the Track including but not limited to, all earth work, track rehabilitation, track con-

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

struction and switch construction. Upon receipt of such accounting, Railroad shall have a period of one hundred twenty (120) days to audit the records and accounts of Tower to verify the accuracy of the Tower accounting. Such audit shall be conducted upon reasonable notice to Tower during normal business hours.

Tower shall submit plans to Railroad for its approval as to proposed work to rehabilitate, refurbish and construct the Track. Upon written approval of such plans by Railroad, Tower shall commence construction. Upon completion of construction, Tower shall receive a payment of Twenty-Five Cents ($0.25) per ton of coal shipped from the Leased Premises via Railroad Company's main line rail track, commencing as of the first of the month next after completion of the construction. The total amount of such payments shall not exceed the actual cost of the rehabilitation, refurbishment and construction of the Track as shown by Tower's accounting. Said payments shall be accomplished by Railroad making checks payable to Tower each month. Railroad shall provide a monthly accounting to Tower showing the beginning balance in the Tower cost account, the tonnage shipped for the month, the total payment for the month and the balance at the end of the period.

5. Ownership of Trackage. Tower shall not receive any ownership in existing trackage by reason of rehabilitation of refurbishing each trackage. Tower will, however, be entitled to payment for cost of materials and labor expended in rehabilitating or refurbishing such existing trackage in the same manner as provided herein that it received payment for construction new trackage. Tower shall own all new trackage constructed pursuant to this Trackage Agreement so long

INCORPORATED
MAY 17 2000
Div. of Oil, Gas & Mining

as it has not been paid in full by Railroad for all costs incurred in the construction of such Trackage. Upon the occurrence of full payment of all such costs, Tower shall execute a bill of sale in favor of Railroad transferring ownership of the trackage to Railroad.

6. The railroad hereby ratifies and confirms the above described Trackage Agreement as being in full force and effect in accordance with its terms and conditions.

7. Except as hereinabove specifically modified and changed, all of the terms and conditions of the subject Trackage Agreement shall continue in full force and effect.

IN WITNESS WHEREOF, the parties have executed this Amendment to Trackage Agreement the day and year first above written.

LESSOR

By: _____
Utah Railway Company
Executive Vice President

ATTEST:

_____

LESSEE

By: _____
Tower Resources, Inc.

ATTEST:

_____

INCORPORATED
MAY 17 2000
Div. of Oil, Gas & Mining

BEAVER CREEK Coal Company
Post Office Box 1378
Price, Utah 84501
Telephone 801 637-5050

July 28, 1988

Mr. Sam Quigley
General MAnager
Andalex Resources, Inc.
P.O. Box
Price, Utah 84501

Re: Agreement on Beaver Creek Coal Company
Leased Land at Wildcat Loadout

Dear Mr. Quigley:

This letter will confirm Beaver Creek Coal Company's permission for Andalex to use a portion of our leased land for the Wildcat Loadout operations. The area covered by this agreement is that to the east of our fence to the railroad right-of-way and south of the new gate.

As agreed, in exchange for this permission, Andalex has cleaned up the old truck dump area and installed a gate to restrict access.

Sincerely,

D.R. Meadors

DRM/rs

cc: K.J. Brasher
J.L. Coffey
D.W. Guy

INCORPORATED
MAY 17 2000
Div. of Oil, Gas & Mining

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Moab District
P. O. Box 970
Moab, Utah 84532

IN REPLY REFER TO
2890
U-48027
(U-066)

CERTIFIED--RETURN RECEIPT REQUESTED
Certification No. 4248977

JAN 12 1982

Decision

Right-of-Way Granted
Details of Grant

Serial Number:	U-48027
Name of Holder:	Tower Resources Incorporated P. O. Box 1027 Price, Utah 84501
Map showing the Location of Grant:	Centennial Project - Wildcat Siding - Proposed Train Loadout - BLM Right-of-Way Amended Application U-48027
Legal Description:	SLB&M T. 13 S., R. 9 E., Section 33, E½SE¼SW¼NE¼, E½SE¼NE¼SW¼, E½NE¼SE¼SW¼ E½SE¼SE¼SW¼; E½NW¼SE¼, E½NW¼NW¼SE¼, SW¼NW¼SE¼, N½SW¼SE¼
Permitted Use:	Construction, operation, and maintenance of a coal storage and loadout facility
Authority:	Federal Land Policy and Management Act of 1976 (90 Stat. 2776; 43 U.S.C. 1761, Sec. 501(a)(7))
Effective Date:	Effective the date of this decision
Termination Date:	Thirty (30) years from the date of this decision

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

Rental

Amount:	$5000.00 advanced rental deposit. Actual charges will be determined after a formal appraisal
When Payable:	Yearly

Pursuant to the authority vested in the undersigned by Order No. 701 of the Director, Bureau of Land Management, dated July 23, 1964 (20 F.R. 10526), amended and redelegated, a right-of-way bearing the above referenced serial number is hereby granted, subject to the details shown above, and subject to the terms and conditions in Appendix A , attached hereto and made a part thereof.

District Manager

Enclosures (2)
1-Terms and Conditions
2-Form 1842-1

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

BEAVER CREEK Coal Company
Post Office Box 1378
Price, Utah 84501
Telephone 801 637-5050

July 28, 1988

Mr. Sam Quigley
General MAnager
Andalex Resources, Inc.
P.O. Box
Price, Utah 84501

Re: Agreement on Beaver Creek Coal Company
Leased Land at Wildcat Loadout

Dear Mr. Quigley:

This letter will confirm Beaver Creek Coal Company's permission for Andalex to use a portion of our leased land for the Wildcat Loadout operations. The area covered by this agreement is that to the east of our fence to the railroad right-of-way and south of the new gate.

As agreed, in exchange for this permission, Andalex has cleaned up the old truck dump area and installed a gate to restrict access.

Sincerely,

D.R. Meadors

DRM/rs

cc: K.J. Brasher
J.L. Coffey
D.W. Guy

INCORPORATED
MAY 17 2000
Div. of Oil, Gas & Mining

IN REPLY REFER TO
2890
U-48027
(U-066)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Moab District
Price River Resource Area
P. O. Drawer AB
Price, Utah 84501

Tower Resources Incorporated :

P. O. Box 1027 : Right-of-Way

Price, Utah 84501 :

.....

NOTICE TO PROCEED

You are hereby notified to proceed with work associated with executed right-of-way grant U-48027.

For work described in this right-of-way, Mark Mackiewicz is designated as the authorized representative.

Leon E. Berggren
Area Manager

4/8/87
Date

Grantee's Acknowledgement

4-9-87
Date

Samuel C Quigley
(Signature of Recipient)

Samuel C. Quigley, General Manager
(Name and Title)

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Moab District
Price River Resource Area
P.O. Drawer AB
Price, Utah 84501

IN REPLY
REFER TO:

U-48027
U-52065
2800
(U-066)

AUG 4 1983

CERTIFIED MAIL--RETURN RECEIPT REQUESTED
Certification No. P498 178 595

DECISION

Tower Resources Inc.	:	Right-of-Way Applications
P.O. Box 1027	:	Amendment to U-48027
Price, Utah 84501	:	Access Road, U-52065

Amendment Approved

Access Road Approved

By application filed October 29, 1982, Tower Resources, Inc., requested amendment to right-of-way U-48027. The amendment proposes relinquishment of 2.5 acres in the SE¼SE¼SE¼SW¼, Section 33, T. 13 S., R. 9 E., SLBM and inclusion of 2.5 acres in the NW¼SW¼SW¼SE¼, Section 33, T. 13 S., R. 9 E., SLBM.

Additionally, on January 9, 1983, Tower Resources, Inc., filed an application, U-52065, for an access road to the site granted under right-of-way U-48027. The access road is a linear portion 100 feet wide and 704.99 feet long across the N½NW¼NE¼SE¼, Section 33, T. 13 S., R. 9 E., containing 1.62 acres, more or less.

Therefore, under the authority of Section 502 of the Federal Land Policy and Management Act of 1976 (90 STAT 2776; 43 U.S.C. 1761) and subject to 43 CFR 2800 the application U-52065 is hereby cancelled and both the site relocation and access road to the site are approved as amendments to the original right-of-way grant U-48027. Such approval is subject to the following:

1. The term of the amendments coincides with the original grant and will terminate January 11, 2012.

2. All terms and conditions of the original grant are in full force and effect for the amendments. (Note Stipulation 18 for construction of access road.)

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining
AUG 05 19

3. The amendment for the site relocation does not change the acreage and no additional rental will be required. However, the access road does increase the acreage of the grant by 1.62 acres. This acreage will be appraised and the Holder will be billed accordingly for the period from the date of this decision to January 11, 1984. At that time the annual rental will be adjusted to include both the site and the road.

If the applicant is adversely affected by this action, there is a right of appeal to the Board of Land Appeals, Office of the Secretary, in accordance with the regulations in 43 CFR, Part 4, Subpart E. If an appeal is taken, the notice of appeal must be filed in the office shown on enclosed form 1842-1 (not with the Board), so that the case file can be sent to the Board. A copy of the notice of appeal and of any statement of reasons, written arguments, or briefs must be served upon any adverse parties, and in addition, to the Regional Solicitor, U.S. Department of the Interior, Room 6201, Federal Building, 125 S. State, Salt Lake City, Utah 84111, within 15 days of the filing of any specific document. If the procedures set forth in the regulations are not followed, an appeal is subject to dismissal.

Lin E. Burgess
Area Manager

Enclosure
Form 1842-1

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

2890
U-48027
(U-066)

Moab District
P. O. Box 970
Moab, Utah 84532

MAR 24 1982

CERTIFIED--RETURN RECEIPT REQUESTED
Certification No. 4248987

Amendment #1

Decision

Right-of-Way Amended
Details of Amendment

Serial Number:	U-48027
Name of Holder:	Tower Resources Incorporated P. O. Box 1027 Price, Utah 84501
Map showing the Location of Grant:	Centennial Project - Wildcat Siding - Proposed Train Loadout BLM Right-of-Way Amended Application U-48027
Legal Description:	SLB&M T. 13 S., R. 9 E., Section 33, E½NE¼NE¼SW¼, W½NW¼NW¼SE¼, comprising 10 acre
Permitted Use:	Construction, operation, and maintenance of a coal storage and loadout facility
Authority:	Federal Land Policy and Management Act of 1976 (90 Stat. 2776; 43 U.S.C. 1761, Sec. 501(a)(7))
Effective Date:	Effective the date of this decision
Termination Date:	January 11, 2012

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

INCORPORATED
EFFECTIVE:
APR 26 1999
Amendment # 1
OIL, GAS AND MINING

Moab District
Price River Resource Area
P.O. Drawer AB
Price, Utah 84501

U-48027
U-52065
2800
(U-056)

AUG 4 1983

Amendment #2

CERTIFIED MAIL--RETURN RECEIPT REQUESTED
Certification No. P498 178 595

DECISION

Tower Resources Inc.	:	Right-of-Way Applications
P.O. Box 1027	:	Amendment to U-48027
Price, Utah 84501	:	Access Road, U-52065

Amendment Approved

Access Road Approved

By application filed October 29, 1982, Tower Resources, Inc., requested amendment to right-of-way U-48027. The amendment proposes relinquishment of 2.5 acres in the SE¼SE¼SE¼SW¼, Section 33, T. 13 S., R. 9 E., SLBM and inclusion of 2.5 acres in the NW¼SW¼SW¼SE¼, Section 33, T. 13 S., R. 9 E., SLBM.

Additionally, on January 9, 1983, Tower Resources, Inc., filed an application, U-52065, for an access road to the site granted under right-of-way U-48027. The access road is a linear portion 100 feet wide and 704.99 feet long across the N½NW¼NE¼SE¼, Section 33, T. 13 S., R. 9 E., containing 1.62 acres, more or less.

Therefore, under the authority of Section 502 of the Federal Land Policy and Management Act of 1976 (90 STAT 2776; 43 U.S.C. 1761) and subject to 43 CFR 2800 the application U-52065 is hereby cancelled and both the site relocation and access road to the site are approved as amendments to the original right-of-way grant U-48027. Such approval is subject to the following:

1. The term of the amendments coincides with the original grant and will terminate January 11, 2012.

2. All terms and conditions of the original grant are in full force and effect for the amendments. (Note Stipulation 18 for construction of access road.)

INCORPORATED
EFFECTIVE:
APR 26 1999
Amendment #2
UTAH DIVISION OIL, GAS AND MINING

INCORPORATED
MAY 17 2000
Div. of Oil, Gas & Mining

Moab District
Price River Resource Area
P. O. Drawer AB
Price, Utah 84501

2890
U-48027
(U-066)

CERTIFIED MAIL--Return Receipt Requested
Certification No. 672 500 405

AUG [illegible]

DECISION

Tower Resources Incorporated :
P.O. Box 902 : Right-of-Way U-48027
Price, Utah 84501 :

Right-of-Way Amended
Details of Amendment No. 3

On June 28, 1985, an application to amend right-of-way U-48027 was filed.

The right-of-way is hereby amended subject to the following terms and conditions:

1. A parcel described as Salt Lake Meridian, T. 13 S., R. 9 E., Section 33, E1/2SW1/4SW1/4NE1/4, W1/2SE1/4SW1/4NE1/4, encompassing 5.73 acres, more or less, is added to right-of-way U-48027.

2. Authorized uses on the site are:

a. Placement of truck scales

b. Location of an office trailer

c. Conducting stoker coal sales

d. All operations incident to conducting coal loading and storage currently authorized under right-of-way U-48027.

3. The holder shall pay the fair market rental value for the rights authorized in the grant. Additional rental charges will be included in the yearly rental fee for the right-of-way.

4. All other applicable terms and conditions of the original grant and subsequent amendments are in full force and effect.

If you are adversely affected by this action, there is a right of appeal to the Board of Land Appeals, Office of the Secretary, in accordance with the regulations in 43 CFR, Part 4, Subpart E. If an appeal is taken, the notice

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

INCORPORATED
EFFECTIVE:
APR 26 1999
998
Amendment # 3
UTAH DIVISION OIL, GAS AND MINING

2890
UTU-48027
(U-066)

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

CERTIFIED MAIL--Return Receipt Requested
Certification No. 734 907 833

JAN - 4 1999

DECISION

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

Right-of-way Amendment
Application No. 4 UTU-48027

Amendment Approved
Details of Amendment

On October 14, 1988, Andalex Resources Incorporated filed an application to amend right-of-way UTU-48027. The subject application was filed under authority of the Federal Land Policy and Management Act of 1976 (90 Stat. 2776, 43 U.S.C. 1761). The application requests an authorization to utilize approximately 8.0 acres of public lands currently occupied by facilities used in the operation of a coal loadout facility. The amendment is hereby approved subject to the following terms and conditions:

1. Authorization is given to use the following described public lands for all operations and facilities incident to the construction, operation and maintenance of a coal loadout facility:

Salt Lake Base and Meridian
T. 13 S., R. 9 E.,
Section 33, NE4SW4NE4, W2SE4SW4NE4,
SW4SW4NE4, W2E2E2SW4, W2NE4SW4,

Comprising 8.0 acres more or less

2. The map entitled Amendment No. 4 attached hereto is incorporated into and made a part of this amendment.

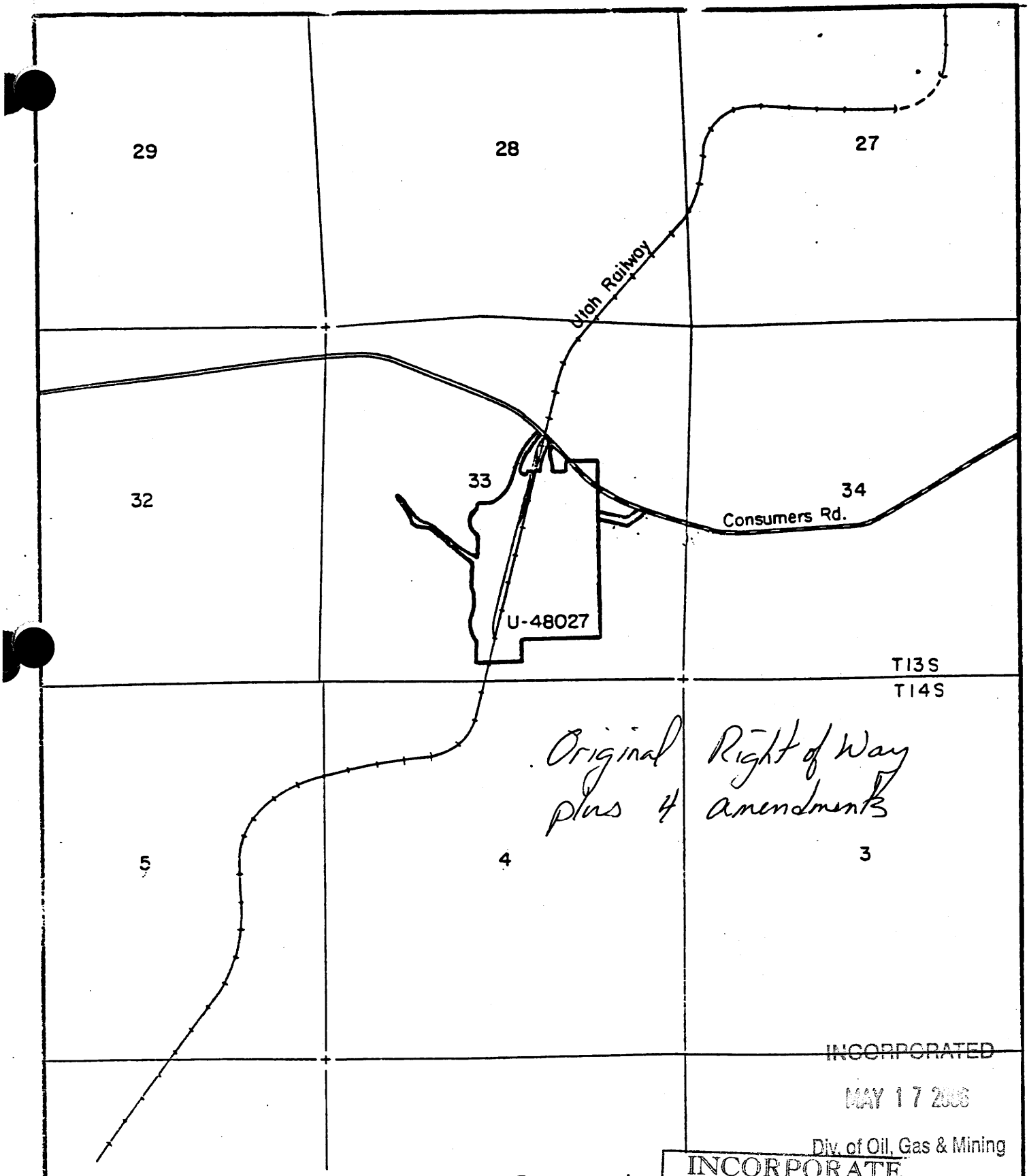
3. The amendment is subject to all terms, conditions, and stipulations found in the original grant and subsequent amendments.

4. Rental in the amount of $684.00 is due within thirty (30) days from the date of receipt of this decision.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

INCORPORATED
EFFECTIVE:
APR 26 1999
UTAH DIVISION OIL, GAS AND MINING

1998 Amendment #4



INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

Andalex Resources, Inc.
Wildcat Loadout
T13S, R9E, SLB&M

Amended Right-of-Way

Scale: 1" = 2,000'0"
1-24-89 JB

INCORPORATED
EFFECTIVE:
APR 26 1999
UTAH DIVISION OIL, GAS AND MINING

APPENDIX B
PART A-12

BLM RIGHT-OF-WAY
AMENDMENT NO. 5
FEBRUARY 5, 2007

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Price Field Office
125 South 600 West
Price, Utah 84501
http://www.blm.gov/utah/price/

TAKE PRIDE IN AMERICA

Hand Delivered

2/5/07
Date

2800
UTU-48027 (mr)
(UT-070)

Andalex Resources, Inc.
PO Box 902
Price, Utah 84501

Re: Wildcat Loadout Extension

DECISION

Amendment Approved
Rental Determined

Right-of-way (ROW) UTU-48027 is hereby amended to authorize an extension of the existing Wildcat coal storage and loadout facility, in accordance with the enclosed Plan of Development (Exhibit A) and the map (Exhibit B). This amendment will encumber an additional 149.650 acres for a right-of-way total of 250 acres.

The amendment is legally described as:

T. 13 S., R. 09 E., Salt Lake Meridian, Carbon County, Utah
Section 33: SE¼SW¼NE¼, E½SW¼, SE¼.

This amendment is granted under the authority of Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776 43 U.S.C. 1761). It is amended subject to all valid existing rights, the terms and conditions of the original grant approved January 12, 1982, and 43 CFR 2800. The rental for the amendment was figured to coincide with the original grant. The rental due through December 31, 2007, is $17,820.83.

mr

The enclosed Plan of Development and the map are made a part of this amendment as terms and conditions. Additional Terms and Conditions to the right-of-way grant are attached as well. The term of this amendment to the right-of-way grant is being established to coincide with the original grant and expires on December 31, 2012.

The cost reimbursement provisions of 43 CFR 2805.16 and 2885.23, establish a cost recovery fee schedule for monitoring fees. It has been determined that your application falls under Category II. Under this category, you are required to pay a non-refundable monitoring fee in the amount of $368.00 before we can issue this an authorization. The total payment required at this time is $18,188.83.

The issuance of this ROW amendment constitutes a final decision by the Bureau of Land Management in this matter.

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4, and the enclosed Form 1842-1. If an appeal is taken, your notice of appeal must be filed in this office (at the above address) within 30 days from receipt of this decision. The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition pursuant to regulation 43 CFR 4.21 (58 FR 4939, January 19, 1993) or 43 CFR 2801.10 for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and petition for a stay **must** also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay

Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards:

(1) The relative harm to the parties if the stay is granted or denied;

(2) The likelihood of the appellant's success on the merits;

(3) The likelihood of immediate and irreparable harm if the stay is not granted; and

(4) Whether the public interest favors granting the stay.

Should you appeal, you must still pay the rental requested. Failure to pay on time may result in termination of the right-of-way [see 43 CFR 2805.12(f) and 2806.13(c) or 2885.17(c)].

Please note, however, that under the regulations in 43 CFR Group 2800, this decision is effective even if an appeal is filed.

You have 30 days from receipt of this letter to submit the above-mentioned rental payment. Should the rental not be received within the time allowed, the application will be rejected.

If you have any questions, please contact Mike Robinson, Realty Specialist, at the above address or call (435) 636-3630.

Sincerely,

Roger Bankert
Field Manager

4 Enclosures:

1 - Exhibit A Plan of Development
2 - Exhibit B Map
3 - Exhibit C Additional Terms & Conditions
4 - Appeals Information (Form #1842-1)

EXHIBIT A

Andalex Resources, Inc.
Wildcat Loadout Expansion Project
Plan of Development

Andalex Resources, Inc. (ARI) currently maintains a ROW (U-48027) for the Wildcat Loadout (Loadout) on 100.350 acres of land utilized as a coal preparation and loading facility for a number of mines located within the area. Of the 100.350 acres, approximately 12.5 acres are under lease to Utah Railway (U-52065) by the BLM). The Loadout site is permitted under Utah Division of Oil Gas and Mining (UDOGM). The facility has three truck dumps, a unit train loading track, and numerous conveyor belts, as well as numerous structures to facilitate reclaiming, crushing, storage and loadout of coal.

The Loadout facility is located on federal land in Carbon County, Utah (Plate 1). The current ROW is not large enough to facilitate total coal fine containment (primarily airborne dust from the coal piles). ARI needs to expand their facility site to create two new drainage ditches that would run into a new sediment pond for coal fine containment. The area is located in Section (Sec.) 33, Township (T.) 13 South (S.), Range (R.) 9 East (E.) of the Salt Lake Base and Meridian (SLB&M) (Plate 1). The Wildcat Loadout Expansion Project would necessitate expanding the ROW to include the E½SW¼ and the entire SE ¼ of Sec. 33, approximately 150 acres.

In the event the pond required decanting, a gas powered pump would be utilized. The pond would act as a retention basin to capture surface deposits of coal fines that currently could enter the existing drainages. The coal fines would be removed periodically or when the material reaches 60 percent of designed capacity. The fines would be hauled to an approved UDOGM refuse disposal site. The existing natural drainages serve as an undisturbed bypass to allow runoff from adjacent undisturbed land to bypass the pond.

It is important to note that a portion of the area is a recently reclaimed well pad location leased by ConocoPhillips Company. Roads within the project area would require no upgrading. No new fencing or culverts would be installed.

Construction of Storm Drainage – The Proposed Project would create two drainage ditches located inside of the 2 large natural washes (Plate 2). These drainage ditches would be approximately 36 inches deep with a 2:1 side slope (approximately 20 feet in width)(Figure 1). The southern most ditch would be approximately 1,930 feet (0.88 acres) in length and the northern most ditch would be approximately 2,067 feet (0.94 acres) in length. Construction of the ditches would require the utilization of a conventional trackhoe and road grader for a period of three to five days.

The two drainage ditches would meet at a central sediment pond. The approximate size of the pond would be 150 feet by 150 feet (0.52 acres) with an embankment approximately 10 feet in width and 11 feet in height. The pond may necessitate the use of a D-6 class crawler

tractor. The pond is designed to contain all runoff from the lands encompassed by the existing natural drainages (Figure 2). The pond would be constructed in the lowest quadrant of the ROW area whereby most loadout site disturbed area drainage would drain into the pond. The capacity of the pond would be well in excess of the 10-year, 24-hour precipitation event requirement.

One advantage of the pond is its proposed location adjacent to the roadway. This would greatly simplify sediment monitoring and cleanout. The culverted primary spillway would be constructed with an oil skimmer and built to pass the 10-year, 24-hour storm event. The emergency spillway would be lined with concrete or grouted rip-rap and have a bottom width of two feet; a freeboard depth of two feet and 2:1 side slopes and capable of handling a 25-year, 24-hour storm event. Riprap would be installed at the outlet of the open channel spillways to protect the earthen structures from erosional forces.

Topsoil Removal, Salvage and Stockpiling – Available soil over the area ranges from about 6 to 8 inches, of which an average soil layer of about 8 inches thick would be removed and stockpiled as topsoil. The upper 6 to 12 inches is the most suitable soil, however, the subsoils over much of the area support root growth to depths of about 48 inches. Topsoil would be salvaged with backhoes, trackhoes and/or front-end loaders and hauled by dump trucks to the designated topsoil storage area within the disturbed area. As much as 2,129 cubic yards of topsoil could be salvaged.

The topsoil storage area is proposed in the southeast corner of the facilities site near the sediment pond. The stockpile would be protected from erosion and sediment production by roughening the surface, revegetation, berms and silt fences. Subsoil materials would be used over the area for facilities site development and then retrieved for soil reconstruction during reclamation.

Stabilization, Maintenance and Operation Plan – Construction procedures would be consistent with those described within the Utah Nonpoint Source Best Management Plan for Hydrologic Modification. Where runoff and drainage controls would be required, they would be constructed to BLM standards. The hydrologic regime would be protected by the installation and implementation of protection measures at all proposed drainage modifications.

Maintenance would include the periodic cleaning of the pond and drainage control ditches in order to maintain their function. Clean out material would be disposed of off-site in an approved solid waste disposal facility, such as East Carbon Development Corporation (approximately 30 miles southwest of the surface facility). A Spill Prevention Control and Countermeasure Plan (SPCC Plan) has been developed to protect the undisturbed drainages from accidental spills of oil or other petroleum products within the disturbed area. This plan would be available for review at the loadout site.

In the event of spills of petroleum-based products during the construction of the PA, procedures outlined in the SPCC Plan would be followed. The BLM, as well as the Utah

Department of Environmental Quality, would be notified if the release meets the definition of a hazardous waste as defined in 40 CFR 261.

To maintain the cultural, historical and paleontological resource integrity of the area, construction crews and staff would be provided with instructional materials regarding the identification, value, legal protection and treatment of these resources. If any cultural, archeological or paleontological resources are discovered during construction or any operations associated with the railroad, conveyor or surface loadout facilities, all activities would cease at the area of the manifestation. The authorized agency would then be contacted to evaluate the importance and potential of the site. Mitigation measures would, at that time, be made for the value of the resource site. Construction and/or maintenance crews would avoid the site until the resource potential has been determined.

Potential measures to help improve air quality for construction activities include proper maintenance of the construction equipment and limited travel on the construction ROW and dirt access roads. Dust generation from disturbed areas would be reduced through interim watering of active construction areas. An enzyme armor coating on the access road would minimize dust generated by traffic during construction or eliminating it all together. Final reclamation, which included revegetation of all disturbed areas, would eliminate further impacts.

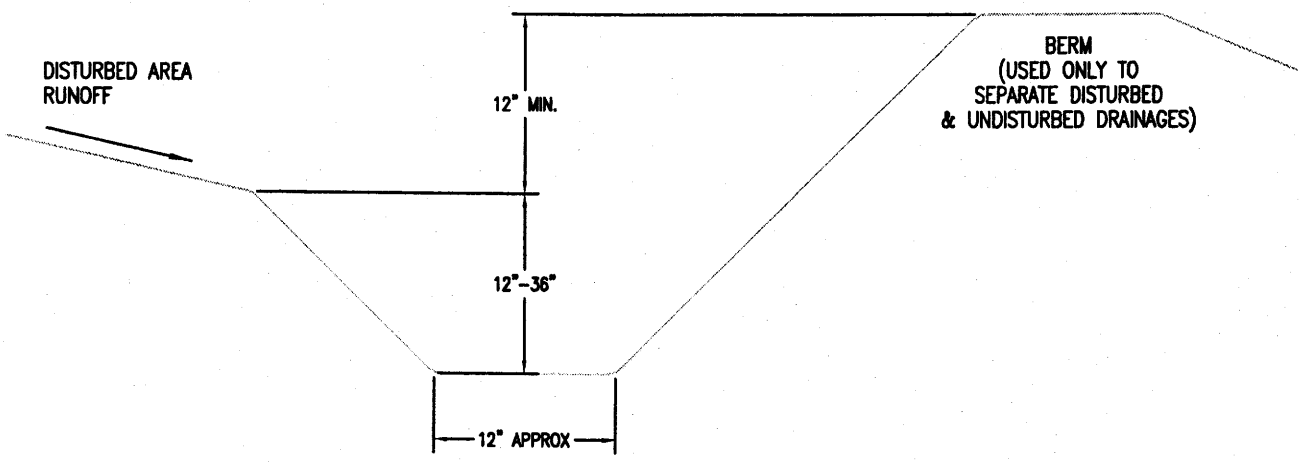
Vegetation removal necessitated by the PA would be confined to the ROW. Vegetation removed would be set-aside during construction activities, and/or left in place upon completion of construction where possible. Reclamation would be completed as stated in the Wildcat M&RP.

Prior to construction and operation of the PA, an awareness and appreciation of wildlife would be taught to all employees associated with the project. All activities associated with the PA development would be coordinated to avoid optimal habitat use periods and areas for all wildlife species. The May 2006 raptor survey conducted by the Utah Division of Wildlife Resources did not find any active nests within 0.5 mile of the proposed project area. However, if active/occupied raptor nests are located within 0.5 mile of any portion of the project area, construction would not begin within that area during the period of February 1 to July 15.

Abandonment and Reclamation The existing Wildcat Loadout Facility would be reclaimed according to the M&RP.

EXHIBIT B

DISTURBED FLOW DITCH
TYPICAL

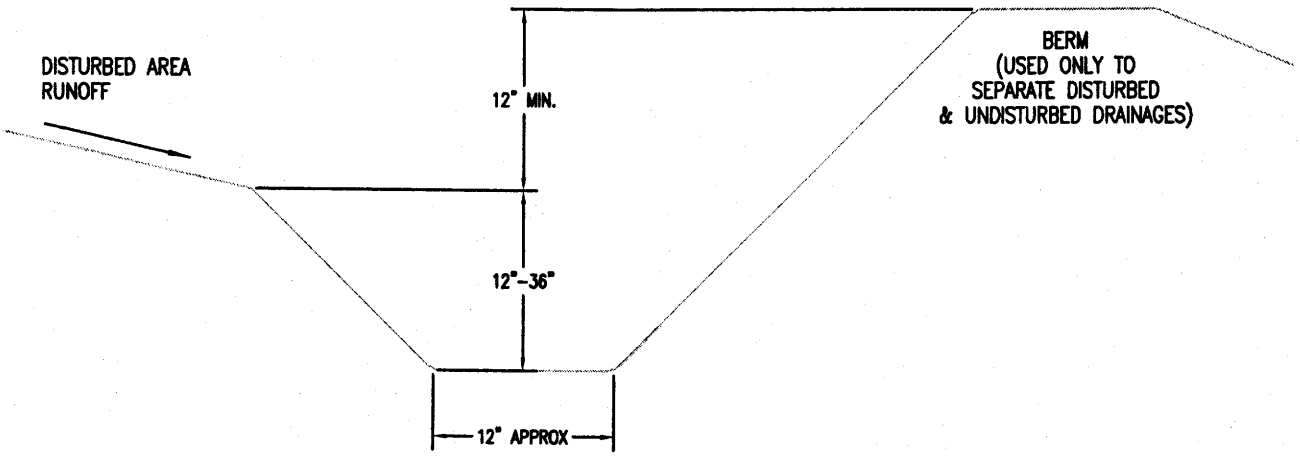


TYPICAL SECTION

NOTE:
DITCHES ARE TYPICALLY UNLINED. WHERE FLOW VELOCITIES EXCEED 5 fps, DITCHES ARE LINED WITH RIP-RAP FOR EROSION PROTECTION.

FIGURE 1

DISTURBED FLOW DITCH
TYPICAL

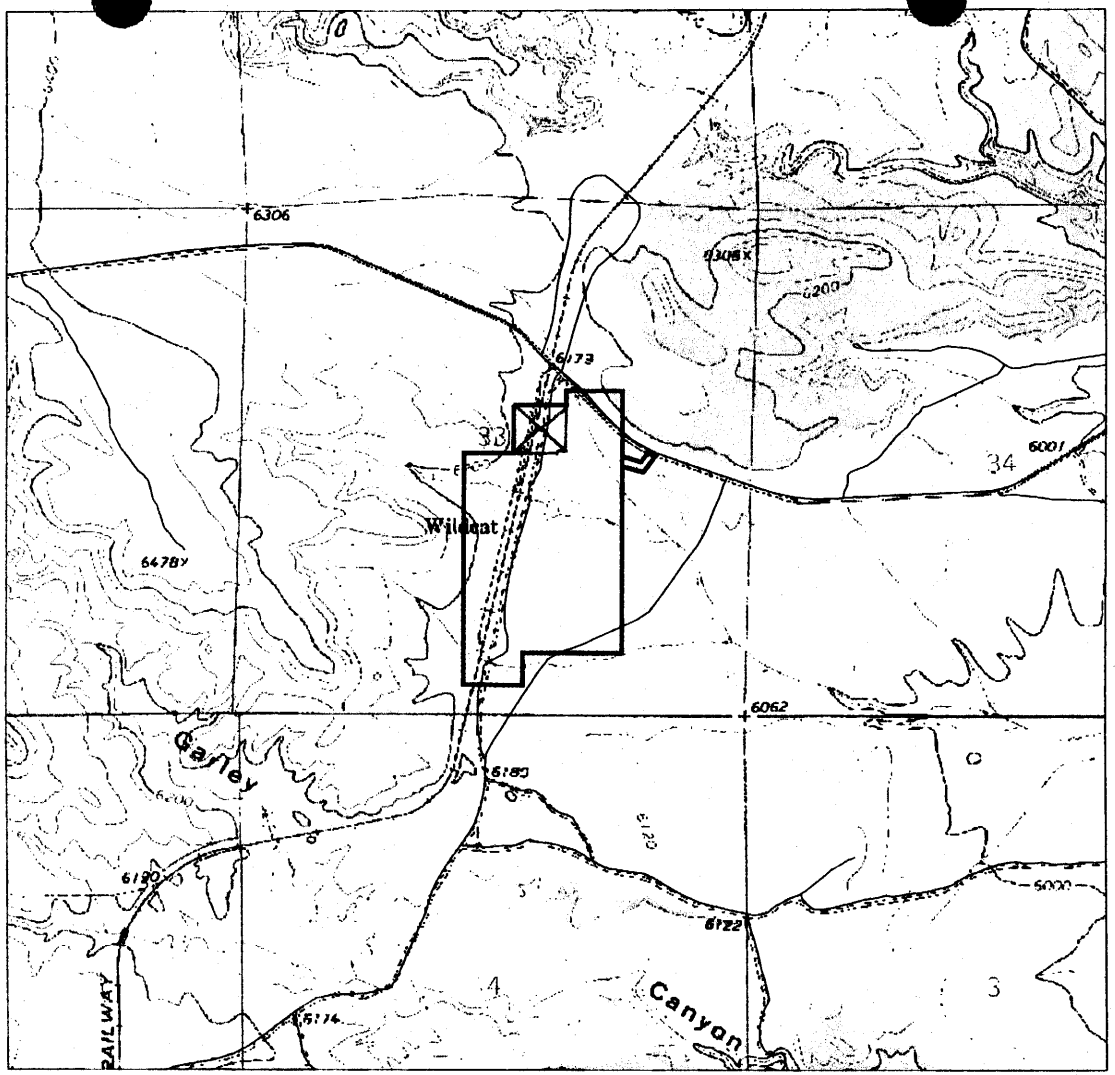


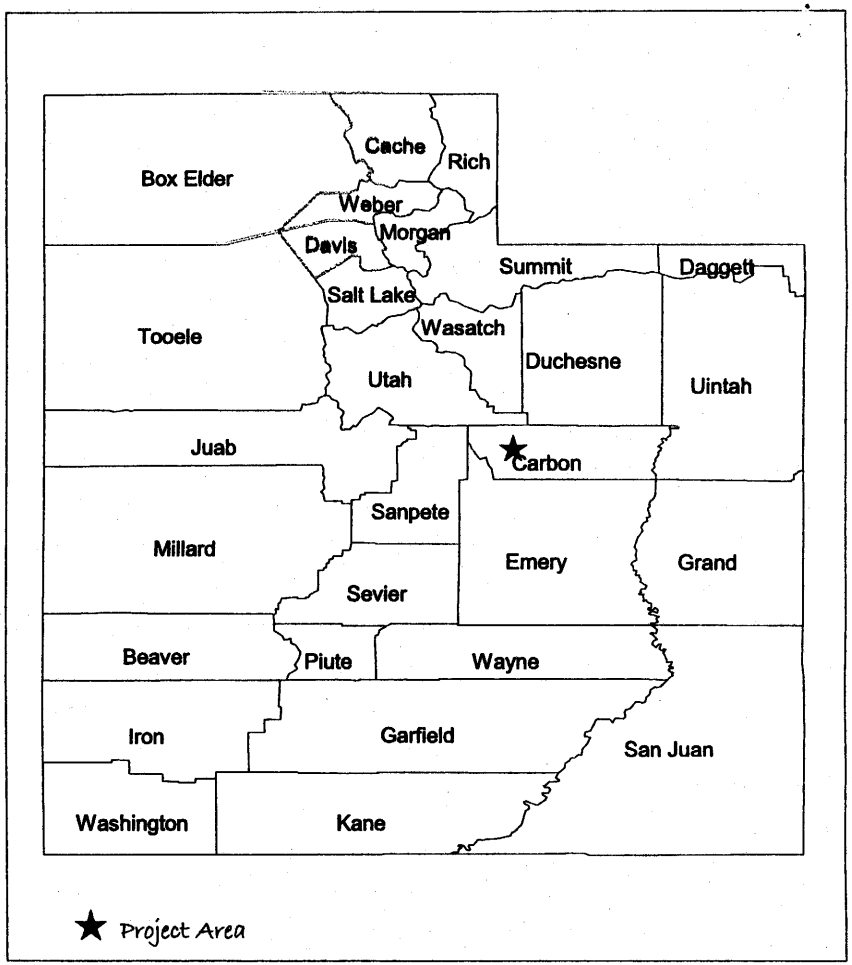
TYPICAL SECTION

NOTE:

DITCHES ARE TYPICALLY UNLINED. WHERE FLOW VELOCITIES EXCEED 5 fps, DITCHES ARE LINED WITH RIP-RAP FOR EROSION PROTECTION.

FIGURE 1





LEGEND

- U-48027
- U-52065

Section 33
Township 13 South,
Range 9 East
Salt Lake Base & Meridian

Proposed Wildcat Loadout
Expansion Project

General Location Area

Created For:

ANDALEX RESOURCES, INC.
P.O. Box 902
Price, Utah 84501

Environmental Industrial Services
Environmental & Engineering Consulting

31 North Main Street
Helper, Utah 84526
(435) 472-3814
Fax- (435) 472-8780
knash@preciscom.net

N

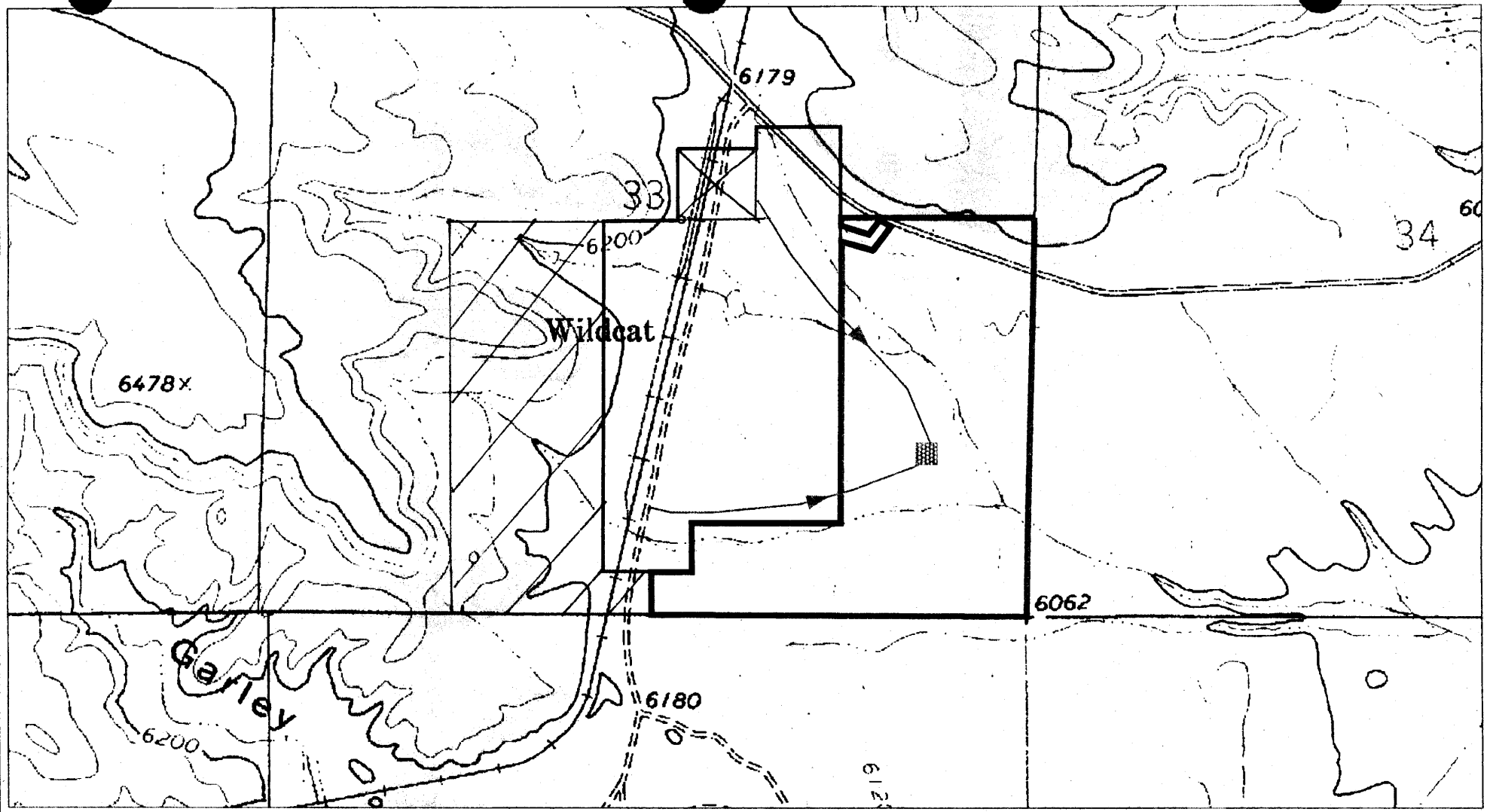
Created By: Katie Nash
Date: October 11, 2006

Scale 1" = 2,000'

DISCLAIMER:
EIS is not responsible for any errors or omissions.
All topographic maps were downloaded from:
http://www.waterrights.utah.gov
EIS 2006

PLATE 1

X = Excluded



LEGEND
- U-48027
- U-52065
- Additional ROW Requested
- Proposed Sediment Pond
- Proposed Drainage Ditch

Section 33
Township 13 South,
Range 9 East
Salt Lake Base & Meridian

Proposed Wildcat Loadout
Expansion Project
Proposed Location

Created For:
ANDALEX RESOURCES, INC.
P.O. Box 902
Price, Utah 84501

Environmental Industrial Services
Environmental & Engineering Consulting
31 North Main Street
Helper, Utah 84526
(435) 472-3814
Fax- (435) 472-8780
knash@preciscom.net

N

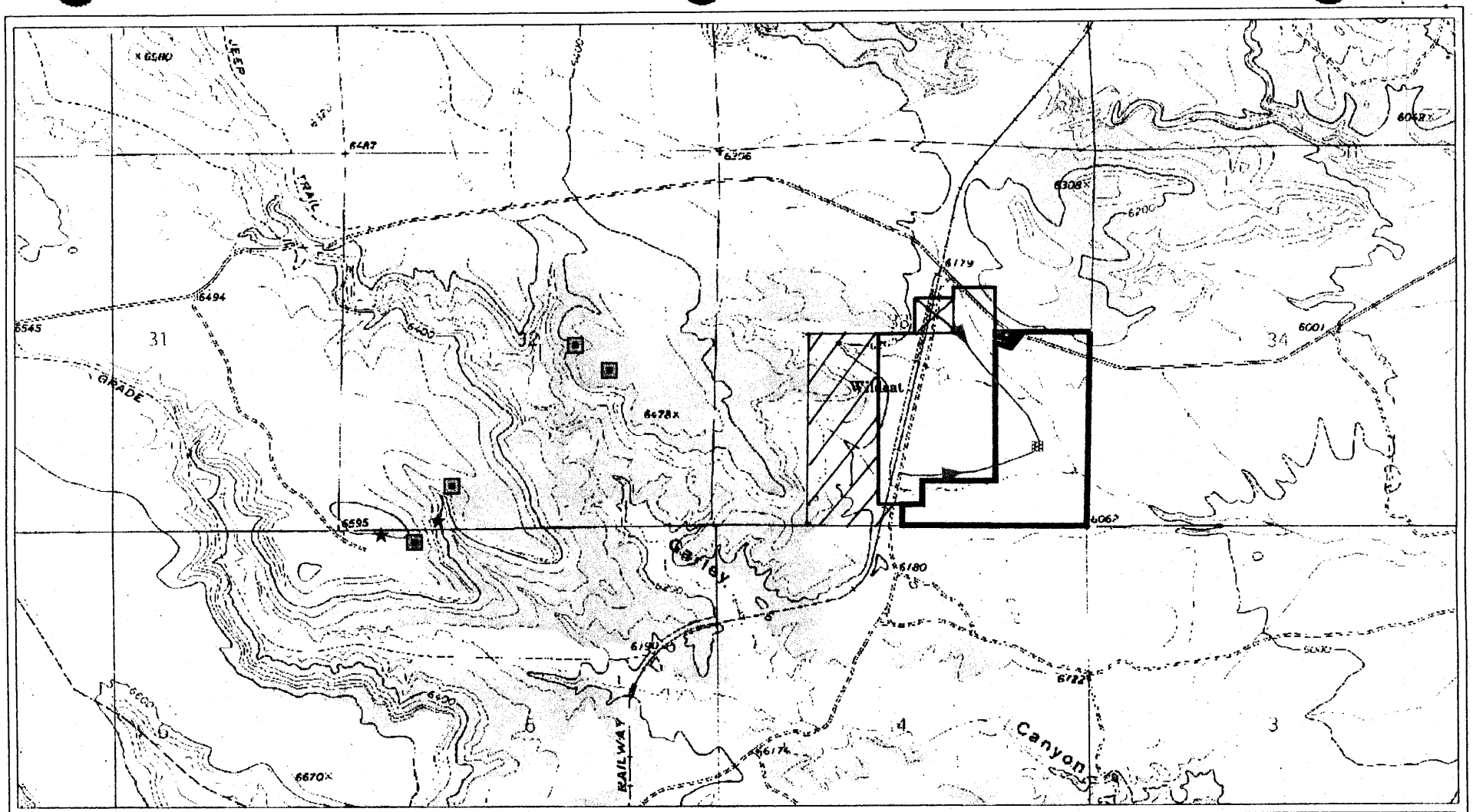
Created By: Katie Nash
Date: October 11, 2006

Scale 1" = 1,000'

DISCLAIMER:
EIS is not responsible for any errors or omissions.
All topographic maps were downloaded from:
http://www.waterrights.utah.gov
EIS 2006

PLATE 2

Y - [illegible] Amendment [illegible] T. 13 S., R. 9 E., § 33: SE¼ SW¼ NE¼ E½ SW¼. SE¼



LEGEND

- Additional ROW Requested
- Proposed Sediment Pond
- Proposed Drainage Ditch
- U-48027
- U-52065
- Golden Eagle
- ★ Red-tailed Hawk

Section 33
Township 13 South,
Range 9 East,
Salt Lake Base & Meridian

Proposed Wildcat Loadout
Expansion Project
2006 Raptor Survey

Created For:

ANDALEX RESOURCES, INC.
P.O. Box 902
Price, Utah 84501

Environmental Industrial Services
Environmental & Engineering Consulting
31 North Main Street
Helper, Utah 84526
(435) 472-3814
Fax- (435) 472-8780
knash@preciscom.net

N

Created By: Katie Nash
Date: October 11, 2006

Scale 1" = 1,000'

DISCLAIMER:
EIS is not responsible for any errors or omissions.
All topographic maps were downloaded from:
http://www.waterrights.utah.gov
EIS 2006

PLATE 3

X = Excluded // = Included Legal = T.13S., R.9E., §33: SE¼ SW¼ NE¼, E½ SW¼, SE¼.

Exhibit C

Additional Terms and Conditions

Wildcat Loadout Extension, UTU-48027

Andalex Resources, Inc.

T. 13 S., R. 09 E., Salt Lake Meridian, Carbon County, Utah

Section 33: SE¼SW¼NE¼, E½SW¼, SE¼.

Stipulations

a. The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the plan of development which was approved and made part of this grant by this amendment. Any relocation, additional construction, or use that is not in accord with the approved plan of development, shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way amendment, including all stipulations, map and approved plan of development, shall be made available on the right-of-way area during construction, operation, and termination to the authorized officer. 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.

b. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

c. Use of pesticides shall comply with the applicable Federal and state laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides, the holder shall obtain from the authorized officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the authorized officer. Emergency use of pesticides shall be approved in writing by the authorized officer prior to such use.

d. The holder shall be responsible for weed control on disturbed areas within the limits of the right-of-way. The holder is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods (within limits imposed in the grant stipulations).

e. The holder shall protect all survey monuments found within the right-of-way. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the holder shall immediately report the incident, in writing, to the authorized officer and the respective installing authority if known. Where General Land Office or Bureau of Land Management right-of-way monuments or references are obliterated during operations, the holder shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the Manual of Surveying Instructions for the Survey of the Public Lands in the United States, latest edition. The holder shall record such survey in the appropriate county and send a copy to the authorized officer. If the Bureau cadastral surveyors or other Federal surveyors are used to restore the disturbed survey monument, the holder shall be responsible for the survey cost.

f. The holder shall comply with all Federal, State, and local regulations whether or not specifically mentioned within this grant.

g. The holder of this right-of-way grant or the holder's successor in interest shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.) and the regulations of the Secretary of the Interior issued pursuant thereto.

h. The holder shall comply with the construction practices and mitigating measures established by 33 CFR 323.4, which sets forth the parameters of the "nationwide permit" required by Section 404 of the Clean Water Act. If the proposed action exceeds the parameters of the nationwide permit, the holder shall obtain an individual permit from the appropriate office of the Army Corps of Engineers and provide the authorized officer with a copy of same. Failure to comply with this requirement shall be cause for suspension or termination of this right-of-way grant.

i. No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of four inches deep, the soil shall be deemed too wet to adequately support construction equipment.

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

k. The holder shall permit free and unrestricted public access to and upon the right-of-way for all lawful purposes except for those specific areas designated as restricted by the authorized officer to protect the public, wildlife, livestock or facilities constructed within the right-of-way.

l. All above-ground structures, production equipment, tanks, transformers, insulators, not subject to safety requirements shall be painted to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors." The color selected is Shale Green (5Y 4/2).

m. The holder will comply with all pertinent state and federal permitting requirements.

n. The holder(s) shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

o. The holder shall comply with all federal, state, and local laws and regulations pertaining to disposal of human and solid wastes.

p. Hazardous substances specifically listed as a hazardous waste under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980, as amended 42 U.S.C. 9601 et seq., and the regulations issued under CERCLA, or demonstrating a character of a hazardous waste (see 40 CFR 261) will not be stored or disposed of on the right-of-way.

q. A minimum of 6 inches of topsoil will be stripped from the location (including areas of cut, fill, and/or subsoil storage areas) and stockpiled for future reclamation.

b. Suitable topsoil material removed in conjunction with clearing and stripping shall be conserved in stockpiles within the right-of-way.

r. For the protection of livestock and wildlife, the entire right-of-way south of Consumers Road shall be fenced. Fencing shall be in accordance with BLM specifications.

s. Topsoil stockpiled for more than three months will be protected from erosion by reducing piles to less than three feet in height and by seeding and possibly mulching. Topsoil stockpiles shall be seeded by the first appropriate period (late autumn or early spring) after their construction.

t. Restoration and seeding should be done either late in the autumn (September 15 to November 15, before freeze up) or as early as possible the following spring to take advantage of available ground moisture. Seeding will be repeated until a satisfactory stand is established as determined by the Authorized Officer. If the seed is broadcast, twice the proposed drilled rate will be used.

u. All disturbed areas shall be recontoured by grading to return the site to approximate the original contour of the ground by forming natural, rounded slopes.

v. The surface soil material will be plowed to form longitudinal depressions 12-18 inches deep and the entire reclamation area will be uniformly covered with the depressions constructed perpendicular to the natural flow of water and/or prevailing wind. Either the above method or some comparable technique (i.e. snow fencing) will be used to roughen the surface and help increase soil moisture retention.

w. Waterbars will be constructed on all disturbed areas to: (1) simulate the imaginary contour lines of the slope with a grade of one or two percent; (2) drain away from the disturbed area; and (3) begin and end in undisturbed vegetation or soil.

x. All equipment and miscellaneous trash must be removed from the location prior to final reclamation operations.

y. The holder shall seed all disturbed areas with an appropriate seed mixture(s) for the area. There shall be no primary or secondary noxious weed seed 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 two 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.

z. 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. (Smaller/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 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 first growing season after seeding. The authorized officer is to be notified a minimum of three days prior to seeding of the project.

aa. The holder shall be responsible for the prevention and suppression of fires on public lands caused by its employees, contractors, or subcontractors. During conditions of extreme fire danger, surface use operations may be either limited or suspended in specific areas, or additional measures may be required by the authorized officer.

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

J. Bruce Hall	Robert Bartlett
(Signature of Holder)	(Signature of BLM Authorized Officer)
Pres & CEO	Field Manager, Price Field Office
(Title)	(Title)
1/26/07	1/29/07
(Date)	(Effective Date of Grant)

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Price Field Office
125 South 600 West
Price, Utah 84501
http://www.blm.gov/utah/price/

TAKE PRIDE IN AMERICA

MAR 2 3 2007

In Reply Refer to:
2800
UTU-48027
(UT-070)

CERTIFIED MAIL NO. 7006 0100 0001 0304 9212
RETURN RECEIPT REQUESTED

Dave Shaver
Andalex Resources, Inc.
PO Box 902
Price, Utah 84501

Re: Wildcat Loadout Extension

Non-Substantial Deviation Approved, Right-of-Way Grant Modified, Rental Reviewed and Proposed Material Storage Area Determined.

We are in receipt of your letter dated March 12, 2007, regarding the proposed changes to the Wildcat Extension amendment dated February 5, 2007. The proposal is in the SE¼, Section 33, T. 13 S., R. 09 E., Salt Lake Meridian, Carbon County, Utah.

The letter submitted detailing the changes to the original application is not considerably different from the approved amendment. The three ponds detailed and the drainages attached thereof will not change the Environmental document that originally analyzed this project. Therefore, it has been determined to be a non-substantial deviation.

In discussions with your company it was found that there was confusion as to what the actual legal description of the right-of-way was as well as the actual boundaries of the ROW on the ground. We reviewed the file and found that the acreages were in error. The Legal description for this file should read:

T. 13 S., R. 9 E. Salt Lake Meridian, Carbon County, Utah
Section 33: NE¼SW¼NE¼, S½SW¼NE¼, E½SW¼, SE¼.

As such the acreage for this ROW is 270 acres. See map enclosed for the details of your original ROW and the newest amendment. Please note these changes on your records.

The original ROW amendment charged you $17,820.83 for rental on 250 acres. Upon further review, it was found that the BLM had overbilled you for rent. The enclosed spreadsheet details this error. We will be issuing you a refund in the amount of $5,233.68 in the coming weeks.

We are also in receipt of your letter dated March 21, 2007 concerning your proposal to develop a material and equipment storage area for your operations. As stated in the original grant's Terms and Conditions:

> "9. If at any time hereafter the holder wishes to reconstruct, remodel or relocate any portion of the right-of-way hereby granted, or any of the improvements thereon, the prior written approval of the Authorized Officer must be obtained. No such approval will be given unless the request is fully justified by the holder and is authorized by law. Where necessary, the holder shall make application under appropriate regulations."

Since this proposal was not on the original application for amendment, a new application for amendment will be required even though it is on your present right-of-way. This new application will need to contain an SF-299, a Plan of Development and a 1:2000 scale map depicting this proposal. The BLM will then be able to further analyze the proposal and any environmental documents needed.

If you have any questions, please contact Mike Robinson, Realty Specialist, at the above address or call (435) 636-3630.

Sincerely,

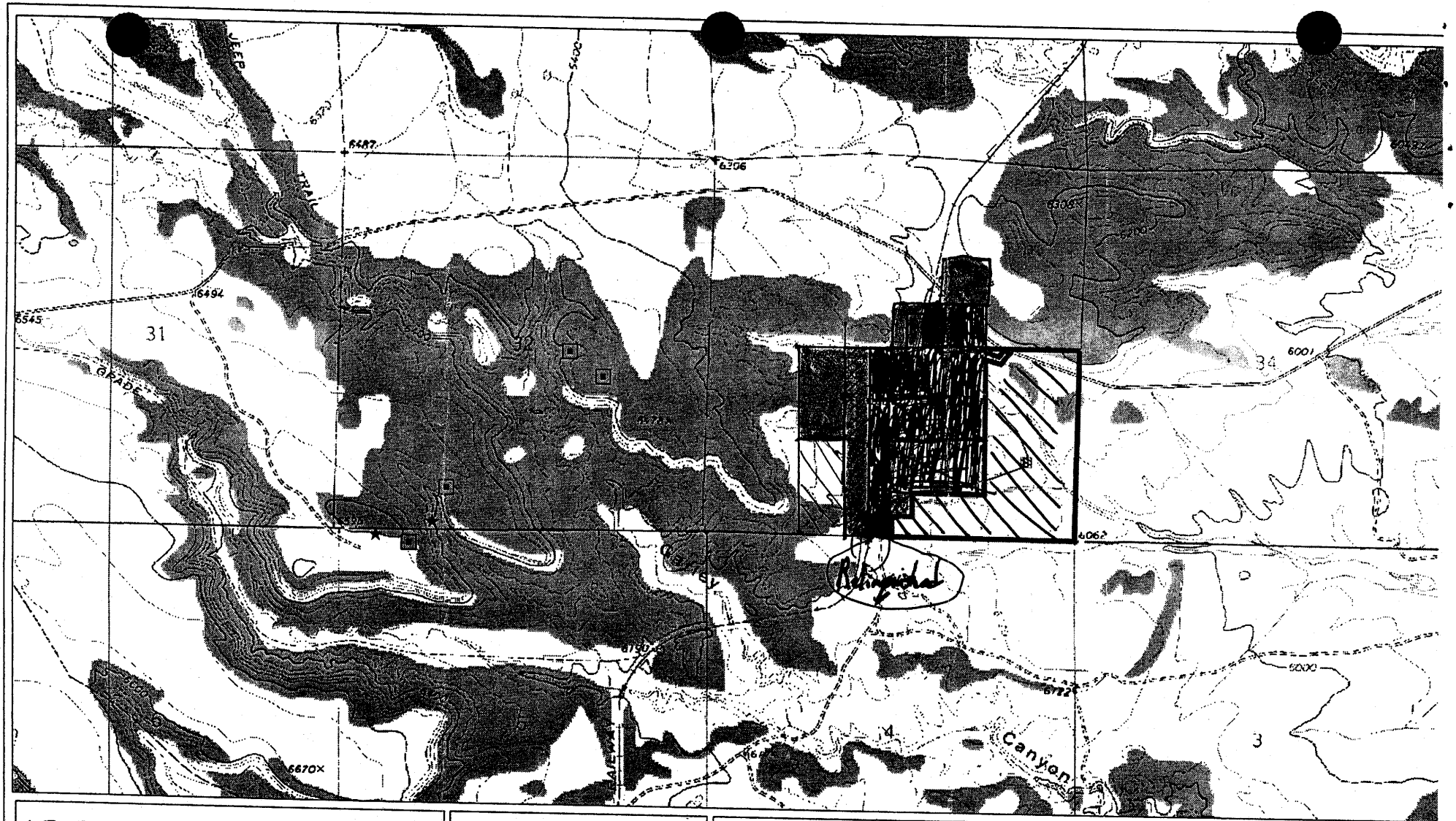
Roger Bankert
Field Manager

Enclosures:
1 - Rental Calculation
2 – Map

Wildcant Loadout Rentals

Year	2007		
Date Paid	**Paid**	**2nd Payment for Amendment**	**Total Paid**
12/21/2006	$8,584.00	$17,820.83	$26,404.83

Acres	Per Acre	Prorated from February approval	Due	
270	$85.54	0.92	$21,171.15	
				Balance
				$5,233.68



LEGEND

- Additional ROW Requested
- Proposed Sediment Pond
- Proposed Drainage Ditch
- U-48027
- U-52065
- Golden Eagle
- ★ Red-tailed Hawk

Section 33
Township 13 South,
Range 9 East,
Salt Lake Base & Meridian

Proposed Wildcat Loadout
Expansion Project
2006 Raptor Survey

Created For:

ANDALEX RESOURCES, INC.
P.O. Box 902
Price, Utah 84501

Environmental Industrial Services
Environmental & Engineering Consulting

31 North Main Street
Helper, Utah 84526
(435) 472-3814
Fax- (435) 472-8780
knash@preciscom.net

N

Created By: Katie Nash
Date: October 11, 2006

Scale 1 " = 1,000 '

DISCLAIMER:
EIS is not responsible for any errors or omissions.
All topographic maps were downloaded from:
http://www.waterrights.utah.gov
EIS 2006

PLATE 3

Shaded is Original ▭ - New Amendment

Michael O. Leavitt
Governor

Dianne R. Nielson, Ph.D.
Executive Director

Ursula Kramer
Director

State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000 Voice
(801) 536-4099 Fax
(801) 536-4414 T.D.D.
Web: www.deq.state.ut.us

DAQE-005-00

January 5, 2000

Michael W. Glasson
Andalex Resources Incorporated
PO Box 902
Price, UT 84501

Dear Mr. Glasson:

Re: Approval Order Modification for DAQE-998-96 to Increase Stockpile Area and Diesel Consumption
Carbon County, CDS-B, ATT; NSPS, Title V

The attached document is an Approval Order for the above-referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. M. Maung. He may be reached at (801) 536-4153.

Sincerely,

Ursula Kramer

Ursula Kramer, Executive Secretary
Utah Air Quality Board

UK:MM:re

cc: Southeastern Utah District Health Department

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS & MINING

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER MODIFICATION FOR DAQE-998-96 TO INCREASE STOCKPILE AREA AND DIESEL CONSUMPTION

Prepared By: M. Maung, Engineer
(801) 536-4153

APPROVAL NUMBER
DAQE--005-00

Date: January 5, 2000

Source Contact

Andalex Resources Incorporated
Michael W. Glasson
(435) 637-5385

Ursula Kramer
Executive Secretary
Utah Air Quality Board

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS & MINING

Abstract

Andalex Resources Incorporated has proposed to modify its active Approval Order DAQE-998-96, dated October 25, 1996. The company requests to increase the stockpile area from 12.5 acres to 16.5 acres and the projected diesel fuel usage from 60 million gallons to 80 million gallons at its Wildcat Loadout facility located in Carbon County. Carbon County is an attainment area of the National Ambient Air Quality Standards (NAAQS) for all pollutants. The emissions, in tons per year, will increase as follows: PM_{10} = 3.84, NO_x = 3.68, SO_2 = 0.31, CO = 1.53, VOC = 0.34, Aldehydes = 0.07. National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations do not apply to this source. New Source Performance Standards (NSPS) Subpart Y (Standards of Performance for Coal Preparation Plants) applies to this source. Therefore, Title V of the 1990 Clean Air Act applies to this source. The annual emissions, in tons per year, from this facility will be as follows: PM_{10} = 22.01, NO_x = 14.72, SO_2 = 1.24, CO = 6.14, VOC = 1.35, Aldehydes = 0.27. It has been determined that the conditions of the Utah Administrative Code R307-401-6 have been met and the executive secretary will issue an Approval Order. Because there was an emissions increase, there was a 30-day public comment period prior to issuance of this Approval Order.

General Conditions:

1. This Approval Order (AO) applies to the following company:

Shipping Address	Corporate Office Location
5496 West 3550 North	Andalex Resources, Inc.
Spring Glen, Utah 84526	PO Box 902
Phone: (435) 637-5385	Price, Utah 84501
Fax: (435) 637-8860	

The equipment listed in this AO shall be operated at the following location:

PLANT LOCATION:

The site is located approximately 10 miles north-northwest of Price, Utah. Travel south from Helper 2.5 miles and turn right on to Consumers Road.

Universal Transverse Mercator (UTM) Coordinate System:
4,389 kilometers Northing; 507 kilometers Easting; Zone 12

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Administrative Code Rule 307 (UAC R307), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence, unless specifically defined otherwise herein.

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS & MINING

3. Andalex Resources Incorporated, owner/operator, shall operate the Wildcat Loadout facility in accordance with the terms and conditions of this AO, which was written pursuant to the company's Notice of Intent submitted to the Division of Air Quality (DAQ) on May 14, 1999 and additional information submitted to the DAQ on October 22, 1999.

4. This AO shall replace the AO dated October 25, 1996 (DAQE-998-96).

5. The approved installations shall consist of the following equipment or their equivalent. Equivalency shall mean identical performance, including any emission discharge, if emissions are involved. It shall be verified and approved by the executive secretary before the equipment or the process is changed.

A. Three truck unloading facilities with below ground receiving hoppers and equipped with water sprays
B. Two coal crushers, each with a rated capacity of 250 tons per hour
C. Three sets of screens, each set of screens with a rated capacity of 500 tons per hour
D. Three radial stackers
E. Underpile reclaim system
F. Railcar loadout consisting of a tower and an extendable chute for loading railcars
G. Associated stockpiles
H. Associated conveyors
I. Associated mobile equipment

Any equipment change or process modification that may alter the requirements of this approval order shall be reviewed by the executive secretary and approved in accordance with R307-401-1, UAC.

6. Visible emissions from any emission point shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9.

Visible fugitive dust emissions from haul-road traffic and mobile equipment in operational areas shall not exceed 20% opacity. Visible emissions determinations for traffic sources shall use procedures similar to Method 9. The normal requirement for observations to be made is at 15-second intervals over a six-minute period; however, shall not apply. Six points, distributed along the length of the haul road or in the operational area, shall be chosen by the executive secretary or the executive secretary's representative. An opacity reading shall be made at each point when a vehicle passes the selected points. Opacity readings shall be made ½ vehicle length or greater behind the vehicle and at approximately ½ the height of the vehicle or greater. The accumulated six readings shall be averaged for the compliance value.

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS & MINING

7. The following production limit and fuel consumption limit shall not be exceeded without prior approval in accordance with R307-401, UAC:

   A. 5,000,000 tons of coal production throughput per rolling 12-month period
   B. 80,000 gallons fuel consumption for on-site diesel equipment per rolling 12-month period

   Compliance with the annual limitations shall be determined on a rolling 12-month total. The owner/operator shall calculate a new 12-month total based on the first day of each month using data from the previous 12 months. Records of production and fuel consumption shall be kept for all periods when the plant is in operation. Records of production and fuel consumption, including rolling 12-month totals shall be made available to the executive secretary or a representative upon request and shall include a period of two years ending with the date of the request. Production shall be determined by records of coal received and fuel consumption shall be determined by fuel bills. The records shall be kept on a daily basis.

Roads and Fugitive Dust

8. All radial stackers shall stack at the highest point of the stockpile to minimize drop distances.

9. All conveyors shall be covered and all crushers shall be enclosed.

10. All unpaved roads and other unpaved operational areas that are used by mobile equipment shall be water sprayed and/or chemically treated to control fugitive dust. The application of water or chemical treatment shall be used. Treatment shall be of sufficient frequency and quantity to maintain the surface material in a damp/moist condition or unless it is below freezing. The opacity shall not exceed 20% during all times the areas are in use. If chemical treatment is to be used, the plan must be approved by the executive secretary. Records of water and/or chemical treatment shall be kept for all periods when the plant is in operation. The records shall include the following items:

    A. Date
    B. Number of treatments made, dilution ratio, and quantity
    C. Rainfall received, if any, and approximate amount
    D. Time of day treatments were made

    Records of treatment shall be made available to the executive secretary or executive secretary's representative upon request and the records shall include the two-year period prior to the date of the request.

11. The haul road limitations shall be:

    A. 0.21 miles in length
    B. 5 miles per hour

    These limitations shall not be exceeded without prior approval in accordance with R307-401, UAC. The haul road speed shall be posted, at a minimum, on site at the beginning of the haul road so that it is clearly visible from the haul road.

INCORPORATED

JUN 0 1 2004

DIV OF OIL GAS & MINING

12. Control of disturbed or stripped areas shall be required at all times (24 hours per day every day) for the duration of the project/operation until the area is reclaimed per R307-205, UAC.

13. Water sprays or chemical dust suppression sprays shall be installed at the following points to control fugitive emissions:

A. All truck unloading stations
B. All screens

The sprays shall operate whenever dry conditions warrant or as determined necessary by the executive secretary.

14. The moisture content of the material passing a #40 U.S. Standard Sieve shall be maintained at a minimum of 4.0% by weight. The moisture content shall be tested if directed by the executive secretary using the appropriate American Society of Testing and Methods (ASTM) method.

15. The storage piles shall be watered to minimize generation of fugitive dusts, as dry conditions warrant or as determined necessary by the executive secretary. Records of water and/or chemical treatment shall be kept for all periods when the plant is in operation. Records of water and/or chemical treatment shall be made available to the executive secretary or executive secretary's representative upon request and the records shall include the two-year period prior to the date of the request. The total combined area of all storage piles shall not exceed 16.5 acres. The area shall be measured if directed by the executive secretary.

Fuels

16. The owner/operator shall use only #1 or #2 diesel oil as fuel. If any other fuel is to be used, an AO shall be required in accordance with R307-401, UAC.

17. The sulfur content of any diesel fuel burned shall not exceed 0.5 percent by weight. Sulfur content shall be decided by ASTM Method D2880-71 or D-4294-89, or approved equivalent. The sulfur content shall be tested if directed by the executive secretary. The percent by weight of the sulfur contained in the fuel can be obtained from the fuel oil certifications. Certification of fuels shall be either by Andalex Resources's own testing or test reports from the fuel marketer. Records of fuel supplier's test report on sulfur content shall be available on-site for each load delivered.

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS & MINING

Federal Limitations and Requirements

18. In addition to the requirements of this AO, all applicable provisions of 40 CFR 60, New Source Performance Standards (NSPS) Subpart A, 40 CFR 60.1 to 60.18 and Subpart Y, 40 CFR 60.250 to 60.254 (Standards of Performance for Coal Preparation Plants) apply to this installation. A copy of the latest 40 CFR 60 Subparts Y (section 60.250-254) is attached to this document as Appendix A. However, to be in compliance, this facility must operate in accordance with the most current version of 40 CFR 60 applicable to this source.

Records & Miscellaneous

19. At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this Approval Order including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the executive secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded, and the records shall be maintained for a period of two years. Maintenance records shall be made available to the executive secretary or executive secretary's representative upon request, and the records shall include the two-year period prior to the date of the request.

20. The owner/operator shall comply with UAC, R307-150 Series. Inventories, Testing and Monitoring. This rule addresses regulated pollutant and hazardous air pollutant emission inventory reporting requirements, and emission statement inventory requirements. The full text of UAC R307-150 Series, Inventories, Testing and Monitoring is included as Appendix B. However, to be in compliance, this facility must operate in accordance with the most current version of the UAC, R307-150 series.

21. The owner/operator shall comply with R307-107, UAC. This rule addresses unavoidable breakdown reporting requirements. The full text of UAC R307-107 General Requirements, Unavoidable Breakdown, is included as Appendix C. However, to be in compliance, this facility must operate in accordance with the most current version of the UAC, R307-107.

All records referenced in this AO or in applicable NSPS which are required to be kept by the owner/operator, shall be made available to the executive secretary or executive secretary's representative upon request, and the records shall include the two-year period prior to the date of the request. All records shall be kept for a period of two years. Emission inventories shall be kept for a period of five years from the due date of each emission statement or until the next inventory is due, whichever is longer. A summary of those records that are required as part of this Approval Order is included herein. This

INCORPORATED
JUN 3 1 2003
DIV OF OIL GAS & MINING

summary shall not be considered an additional requirement, but is included for informational purposes only. The condition that requires that these records be kept as part of the compliance with this AO is listed following the individual record. Examples of records to be kept at this source shall include the following as applicable:

Production rate	Condition number 7
Fuel consumption	Condition number 7
Fugitive emission control	Condition number 10, 15
Maintenance records	Condition number 19
Emission inventory report	Condition number 20
Upset, breakdown episodes	Condition number 21

The list above may not be a complete list of all records that are required to be kept by Andalex Resources Incorporated. For a complete list of required records check all AO conditions, and all applicable Federal regulations, such as NSPS, that apply to this source.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-401, UAC.

The executive secretary shall be notified in writing if the company is sold or changes its name. The notification shall be submitted within 30 days of such action.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including UAC R307.

A copy of the rules, regulations and/or attachments addressed in this AO may be obtained by contacting the Division of Air Quality. The Utah Administrative Code R307 rules used by DAQ, the Notice of Intent (NOI) guide, and other air quality documents and forms may also be obtained on the Internet at the following web site: http://www.eq.state.ut.us/eqair/aq_home.htm

Annual emissions for this source (the entire Wildcat Loadout facility) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	22.01
B.	SO_2	1.24
C.	NO_x	14.72
D.	CO	6.14
E.	VOC	1.35
F.	Aldehydes	0.27

The annual emission estimations above are for the purpose of determining the applicability of Prevention of Significant Deterioration, nonattainment area, maintenance area, and Title V source requirements of the UAC R307. They are not to be used for determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Emissions of the following pollutants from all sources, including pre-

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS & MINING

November 29, 1969 sources, may be subject to the operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the federal agencies, or both.

	Pollutant	Tons/yr
A.	PM_{10}	20.5
B.	SO_2	1.24
C.	NO_x	14.72
D.	VOC	1.35
E.	Aldehydes	0.27

Approved By:

Ursula Kramer

Ursula Kramer, Executive Secretary
Utah Air Quality Board

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS & MINING

Appendix A

Andalex Resources - Wildcat Loadout

40 CFR 60 Subpart Y - Standards of Performance for Coal Preparation Plants

Subpart Y-Standards of Performance for Coal Preparation Plants

§ 60.250 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to any of the following affected facilities in coal preparation plants which process more than 200 tons per day: Thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, and coal transfer and loading systems.
(b) Any facility under paragraph (a) of this section that commences construction or modification after October 24, 1974, is subject to the requirements of this subpart.

[42 FR 37938, July 25, 1977; 42 FR 44812, Sept. 7, 1977]

§ 60.251 Definitions.

As used in this subpart, all terms not defined herein have the meaning given them in the Act and in subpart A of this part.
(a) Coal preparation plant means any facility (excluding underground mining operations) which prepares coal by one or more of the following processes: breaking, crushing, screening, wet or dry
cleaning, and thermal drying.
(b) Bituminous coal means solid fossil fuel classified as bituminous coal by ASTM Designation D388-77 (incorporated by reference-see § 60.17).
(c) Coal means all solid fossil fuels classified as anthracite, bituminous, subbituminous, or lignite by ASTM Designation D388-77 (incorporated by reference-see § 60.17).
(d) Cyclonic flow means a spiraling movement of exhaust gases within a duct or stack.
(e) Thermal dryer means any facility in which the moisture content of bituminous coal is reduced by contact with a heated gas stream which is exhausted to the atmosphere.
(f) Pneumatic coal-cleaning equipment means any facility which classifies bituminous coal by size or separates bituminous coal from refuse by application of air stream(s).
(g) Coal processing and conveying equipment means any machinery used to reduce the size of coal or to separate coal from refuse, and the equipment used to convey coal to or remove coal and refuse from the machinery. This includes, but is not limited to, breakers, crushers, screens, and conveyor belts.
(h) Coal storage system means any facility used to store coal except for open storage piles.
(i) Transfer and loading system means any facility used to transfer and load coal for shipment.

[41 FR 2234, Jan. 15, 1976, as amended at 48 FR 3738, Jan. 27, 1983]

§ 60.252 Standards for particulate matter.

(a) On and after the date on which the performance test required to be conducted by § 60.8 is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any thermal dryer gases which:
(1) Contain particulate matter in excess of 0.070 g/dscm (0.031 gr/dscf).
(2) Exhibit 20 percent opacity or greater.
(b) On and after the date on which the performance test required to be conducted by § 60.8 is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any pneumatic coal cleaning equipment, gases which:
(1) Contain particulate matter in excess of 0.040 g/dscm (0.018 gr/dscf).
(2) Exhibit 10 percent opacity or greater.
(c) On and after the date on which the performance test required to be conducted by § 60.8 is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit 20 percent opacity or greater.

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS & MINING

[41 FR 2234, Jan. 15, 1976]

§ 60.253 Monitoring of operations.

(a) The owner or operator of any thermal dryer shall install, calibrate, maintain, and continuously operate monitoring devices as follows:
(1) A monitoring device for the measurement of the temperature of the gas stream at the exit of the thermal dryer on a continuous basis. The monitoring device is to be certified by the manufacturer to be accurate within ±3° Fahrenheit.
(2) For affected facilities that use venturi scrubber emission control equipment:
(i) A monitoring device for the continuous measurement of the pressure loss through the venturi constriction of the control equipment. The monitoring device is to be certified by the manufacturer
to be accurate within ±1 inch water gage.
(ii) A monitoring device for the continuous measurement of the water supply pressure to the control equipment. The monitoring device is to be certified by the manufacturer to be accurate within ±5 percent of design water supply pressure. The pressure sensor or tap must be located close to the water discharge point. The Administrator may be consulted for approval of alternative locations.
(b) All monitoring devices under paragraph (a) of this section are to be recalibrated annually in accordance with procedures under § 60.13(b).

[41 FR 2234, Jan. 15, 1976, as amended at 54 FR 6671, Feb. 14, 1989]

§ 60.254 Test methods and procedures.

(a) In conducting the performance tests required in § 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in § 60.8(b).
(b) The owner or operator shall determine compliance with the particular matter standards in § 60.252 as follows:
(1) Method 5 shall be used to determine the particulate matter concentration. The sampling time and sample volume for each run shall be at least 60 minutes and 0.85 dscm (30 dscf). Sampling shall begin no less than 30 minutes after startup and shall terminate before shutdown procedures begin.
(2) Method 9 and the procedures in § 60.11 shall be used to determine opacity.

[54 FR 6671, Feb. 14, 1989]

INCORPORATED
JUL 0 1 2004
DIV OF OIL GAS & MINING

Appendix B

Andalex Resources Incorporated - Wildcat Loadout facility

R307-150 Series. Inventories, Testing and Monitoring.
R307. Environmental Quality, Air Quality.
R307-150. Emission Inventories.
R307-150-1. General Applicability.

(1) The following sources shall submit an emission inventory report:

(a) any Part 70 source;

(b) any source that emits or is allowed under R307 to emit 100 ton per year or more of any regulated air pollutant;

(c) any source located in Davis, Salt Lake, Utah or Weber County that emits or is allowed under R307 to emit 25 tons per year or more of a combination of PM10, sulfur oxides, or oxides of nitrogen;

(d) any source located in Davis, Salt Lake, Utah or Weber County that emits or is allowed under R307 to emit 10 tons per year or more of volatile organic compounds;

(e) any source that emits or is allowed under R307 to emit 5 tons per year or more of lead;

(f) any source that emits or is allowed under R307 to emit 10 tons or more per year of ammonia;

(g) any source that is allowed under R307 to emit between 90 and 100 tons per year of any regulated air pollutant;

(h) any source that the executive secretary requires to submit an inventory for any full or partial year on reasonable notice.

R307-150-2. Definitions.

The following additional definitions apply to R307-150:

"Acute Contaminant" means any noncarcinogenic air contaminant for which a threshold limit value - ceiling (TLV-C) has been adopted by the American Conference of Governmental Industrial Hygienists in its "Threshold Limit Values for Chemical Substances and Physical Agents - Biological Exposure Indices, pages 15 - 40 (1997)."

"Carcinogenic Contaminant" means any air contaminant that is classified as a known human carcinogen (A1) or suspected human carcinogen (A2) by the American Conference of Governmental Industrial Hygienists in its "Threshold Limit Values for Chemical Substances and Physical Agents - Biological Exposure Indices, pages 15 - 40 (1997)."

"Chronic Contaminant" means any noncarcinogenic air contaminant for which a threshold limit value - time weighted average (TLV-TWA) having no threshold limit value - ceiling (TLV-C) has been adopted by the American Conference of Governmental Industrial Hygienists in its "Threshold Limit Values for Chemical Substances and Physical Agents - Biological Exposure Indices, pages 15 - 40 (1997)."

"Dioxins" and "Furans" mean total tetra- through octachlorinated dibenzo-p-dioxins and dibenzofurans.

R307-150-3. What to Report.

(1) The requirements of R307-150 replace any annual inventory reporting requirements in approval orders issued prior to April 1, 1998.

(2) The emission inventory report shall include the information the Board deems necessary to determine whether the source is in compliance with R307 and federal regulations and standards. The data shall include emissions of ammonia and all regulated air pollutants not exempted in (3) below that are not hazardous air pollutants that are emitted at a source. Data shall include the rate and period of emission, excess or breakdown emissions, startup and shut down emissions, specific installation which is the source of the air pollution, composition of air contaminant, type and efficiency of the air pollution control equipment and other information necessary to quantify operation and emissions, and to evaluate pollution control. The emissions of a pollutant shall be calculated using the source's actual operating hours, production rates, and types of materials processed, stored, or combusted during the inventoried time period.

(3) Regulated air pollutants that are not PM10, sulfur oxides, oxides of nitrogen, carbon monoxide, PM2.5, ozone, volatile organic compounds, dioxins, furans, or hazardous air pollutants are exempt from being reported if they are emitted in an amount less than the smaller of the following:

(a) 500 pounds per year; or

(b) an annual emission level calculated to be the applicable threshold limit value - time weighted average (TLV-TWA) or the threshold limit value - ceiling (TLV-C) multiplied by the appropriate emission threshold factor in cubic meter pounds per milligram year. For an acute contaminant, the factor is 15.81; for a chronic contaminant, the factor is 21.22; for a carcinogenic contaminant, the factor is 7.07.

(4) In addition, any owner or operator of a source that is required by R307-150-1 to submit an inventory shall use appropriate emission factors and estimating techniques to estimate all emissions from each activity not required by R307-401 or R307-415 to be included in a notice of intent or operating permit application. The estimates shall be included in the inventory.

INCORPORATED
JUL 01 2003
DIV OF OIL GAS & MINING

R307-150-4. Timing of Submittals.

(1) A report is required for 1998, 1999, and for every third year after 1999 for any source which actually emits or is allowed under R307 to emit 10 tons or more per year of ammonia.

(2) Report Every Third Year. The owner or operator of each of the following sources is required to submit a report of emissions every third year. The first report shall be due in 2000 for calendar year 1999 for:

(a) any Part 70 source located in Davis, Salt Lake, Utah or Weber Counties;

(b) any Part 70 temporary source;

(c) any Part 70 source located outside Davis, Salt Lake, Utah or Weber Counties with 25 tons per year or more of combined allowable emissions of PM10, sulfur oxides, oxides of nitrogen, volatile organic compounds or carbon monoxide; or

(d) any stationary source:

(i) located in Davis, Salt Lake, Utah or Weber County that emits or is allowed under R307 to emit a combination of PM10, sulfur oxides, or oxides of nitrogen of 25 tons per year or more;

(ii) located in Davis, Salt Lake, Utah or Weber County that emits or is allowed under R307 to emit 10 tons per year or more of volatile organic compounds;

(iii) located in Davis, Salt Lake, Weber, or Utah County that emits or is allowed under R307 to emit 100 tons per year or more of carbon monoxide;

(iv) that emits 100 tons per year or more of any regulated air pollutant; or

(v) that emits or is allowed to emit 5 tons per year or more of lead;

(e) any source that is allowed under R307 to emit between 90 and 100 tons per year of any regulated air pollutant.

(3) Report Every Sixth Year. Any Part 70 source not included in R307-150-3(2) shall submit an emissions inventory every sixth year. The inventory for calendar year 1996 suffices as the first inventory.

(4) Additional Reports of Emissions Required Under Specified Circumstances. This subsection is applicable to all sources identified in R307-150-1.

(a) A source that initially achieves compliance at any time with any requirement of an applicable state implementation plan shall submit an inventory for the calendar year in which compliance is achieved.

(b) A source that emits or is allowed under R307 to emit 100 or more tons per year of any regulated air pollutant and whose emissions of any of these pollutants increase or decrease by five percent or more from the most recently submitted inventory shall submit an inventory for the calendar year in which the increase or decrease occurred.

(c) A source operating temporarily shall submit an inventory for the calendar year in which the source operated.

(d) A source that is not a temporary source, is required to submit an inventory, and ceases operations shall submit a report of emissions for the partial year and a report for the previous calendar year, if not already submitted.

(e) A new or modified source that is not a temporary source, is required to submit an inventory, and receives approval to construct or begins operating shall submit a report for the initial partial year of operation and a report for the subsequent calendar year.

(5) In addition to the required inventories, any source may choose to submit an inventory for any calendar year. The executive secretary may require at any time a full or partial year inventory on reasonable notice to affected sources.

(6) Due Date. Emission inventories shall be submitted on or before April 15 of each calendar year following any calendar year in which an inventory is required.

R307-150-5. Recordkeeping Requirements.

(1) Each owner or operator of a stationary source subject to this rule shall maintain a copy of the emission inventory submitted to the Division of Air Quality and records indicating how the information submitted in the inventory was determined, including any calculations, data, measurements, and estimates used. The records shall be kept for a period of at least five years from the due date of each emission statement or until the next inventory is due, whichever is longer.

(2) Upon the request of the executive secretary, the owner or operator of the stationary source shall make these records available at the stationary source for inspection by any representative of the Division of Air Quality during normal business hours.

R307. Environmental Quality, Air Quality.
R307-155. Hazardous Air Pollutant Inventory.
R307-155-1. General Applicability.

(1) The owner or operator of a Part 70 stationary source, either "major source" or "area source" as defined in the Clean Air Act Section 112 (42 U.S.C. 7412), that emits one or more hazardous air pollutants shall submit a hazardous air pollutant inventory.

(2) The owner or operator of a source which is not a Part 70 stationary source or a "major source" as defined in the Clean Air Act Section 112 (42 U.S.C. 7412) that emits one or more hazardous air pollutants shall submit a hazardous air pollutant inventory at the request of the executive secretary but not more often than once per year.

(3) Inventory data is not required for each hazardous air pollutant that has a threshold limit value and is emitted in an amount less than the smaller of the following:

(a) 500 pounds per year; or

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS & MI

(b) an annual emission level calculated to be the applicable threshold limit value - time weighted average (TLV-TWA) expressed in milligrams per cubic meter, or the threshold limit value - ceiling (TLV-C) expressed in milligrams per cubic meter multiplied by the appropriate emission threshold factor in cubic meter pounds per milligram year in Table 1 below.

TABLE 1

CONTAMINANT	FACTOR (in cubic meter pounds per milligram year)
Arsenic	21.22
Benzene	21.22
Beryllium	21.22
Ethylene oxide	21.22
Formaldehyde	15.81
All other acute hazardous air pollutants	15.81
All other chronic hazardous air pollutants	21.22
All other carcinogenic hazardous air pollutants	7.07

INCORPORATED
JUN 0 1 2004
DIV OF OIL GAS

Appendix C

Andalex Resources Incorporated - Wildcat Loadout facility

R307. Environmental Quality, Air Quality.
R307-107. General Requirements: Unavoidable Breakdown.
R307-107-1. Application.

R307-107 applies to all regulated pollutants including those for which there are National Ambient Air Quality Standards. Except as otherwise provided in R307-107, emissions resulting from an unavoidable breakdown will not be deemed a violation of these regulations. If excess emissions are predictable, they must be authorized under the variance procedure in R307-102-4. Breakdowns that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered unavoidable breakdown.

R307-107-2. Reporting.

A breakdown for any period longer than 2 hours must be reported to the executive secretary within 3 hours of the beginning of the breakdown if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. During times other than normal office hours, breakdowns for any period longer than 2 hours shall be initially reported to the Environmental Health Emergency Response Coordinator, Telephone (801) 536-4123. Within 7 calendar days of the beginning of any breakdown of longer than 2 hours, a written report shall be submitted to the executive secretary which shall include the cause and nature of the event, estimated quantity of pollutant (total and excess), time of emissions and steps taken to control the emissions and to prevent recurrence. The submittal of such information shall be used by the executive secretary in determining whether a violation has occurred and/or the need of further enforcement action.

R307-107-3. Penalties.

Failure to comply with the reporting procedures of R307-107-2 will constitute a violation of these regulations.

R307-107-4. Procedures.

The owner or operator of an installation suffering an unavoidable breakdown shall assure that emission limitations and visible emission limitations are exceeded for only as short a period of time as reasonable. The owner or operator shall take all reasonable measures which may include but are not limited to the immediate curtailment of production, operations, or activities at all installations of the source if necessary to limit the total aggregate emissions from the source to no greater than the aggregate allowable emissions averaged over the periods provided in the source's approval orders or R307. In the event that production, operations or activities cannot be curtailed so as to so limit the total aggregate emissions without jeopardizing equipment or safety or measures taken would result in even greater excess emissions, the owner or operator of the source shall use the most rapid, reasonable procedure to reduce emissions. The owner or operator of any installation subject to a SIP emission limitation pursuant to these rules shall be deemed to have complied with the provisions of R307-107 if the emission limitation has not been exceeded.

INCORPORATED
JUL 0 1 2003
DIV OF OIL GAS & MINING

Scott M. Matheson
Governor

James O. Mason, M.D., Dr.P.H.
Executive Director
801-533-6111

DIVISIONS
Community Health Services
Environmental Health
Family Health Services
Health Care Financing and Standards

OFFICES
Administrative Services
Health Planning and Policy Development
Medical Examiner
State Health Laboratory

STATE OF UTAH
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
150 West North Temple, P.O. Box 2500, Salt Lake City, Utah 84110

Alvin E. Rickers, Director
Room 426 801-533-6121

533-6108
July 22, 1982

JUL 23 1982

Tower Resources Inc.

Michael W. Glasson
Tower Resources, Inc.
P.O. Box 1027
Price, UT 84501

RE: Approval Order for Air Controls for Coal Crushing, Storage, and Loadout at Wildcat Junction (Carbon Co.)

Dear Mr. Glasson:

On June 18, 1982, the Executive Secretary published a notice of intent to approve your air controls for coal crushing, storage, and loadout operation at Wildcat Junction/Consumer Wash, Carbon County. The 30 day public comment period expired July 17, 1982 and no comments were received.

This air quality approval order authorizes the operation as proposed in your notice of intent dated April 16, 1982, with the following operating conditions:

1. Coal throughput shall be limited to 960,000 TPY. Exceedance of this limit shall require a notice of intent to be submitted to the Executive Secretary in accordance with Section 3.1, UACR.

2. The gravel haul roal shall be treated with magnesium chloride or equally effective chemical dust suppressant to minimize fugitive dust as dry conditions warrant or as determined necessary by the Executive Secretary.

3. The loadout operations shall be as proposed with an underground receiving hopper, covered conveyor to the crusher, and screening building with water washdown capabilities, and water sprays used on the material entering the crusher and exiting via the conveyor.

4. The rail mounted linear stacker shall be operated in a manner to minimize the drop point, free fall distance.

5. All conveyors shall be covered at a minimum on the top and two sides. Water sprays shall be used at drop points as dry conditions warrant.

6. The storage pile shall be chemically stabilized to minimize fugitive dust emissions as dry conditions warrant.

7. The draw-off tunnel conveyor belt shall be skirted, enclosed between individual feeders, and have high pressure sprays.

8. The 200 ton surge bin shall be enclosed. A retractable chute shall be used to minimize the coal's free fall drop distance to the railcar during loading.

9. Visible emissions from all point process and fugitive emission sources shall not exceed 20% opacity.

10. A construction/installation schedule shall be provided to the Executive Secretary when finalized.

11. The Executive Secretary shall be notified upon start-up/normal operations as an initial compliance inspection is required.

Sincerely,

Brent C. Bradford
Executive Secretary
Utah Air Conservation Committee

MRK:jw
cc: EPA Region VIII (D. Kircher)
Southeastern District Health Dept.
1324

OLENE S. WALKER
Governor

GAYLE F. McKEACHNIE
Lieutenant Governor

State of Utah

Department of
Environmental Quality

Dianne R. Nielson, Ph.D.
Executive Director

DIVISION OF AIR QUALITY
Richard W. Sprott
Director

DAQE-AN0113007-04

December 3, 2004

Michael W. Glasson
Manager of Operations
Andalex Resources Inc.
P.O. Box 902
Price, Utah 54501

Dear Mr. Glasson:

Re: Approval Order: Modification to Increase Coal Storage Area, Throughput, and Diesel Fuel Usage at Wildcat Loadout, Carbon County – CDS B; ATT; NSPS, TITLE V MINOR
Project Code: N0113-007

The attached document is the Approval Order (AO) for the above-referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Jon Black. He may be reached at (801) 536-4047.

Sincerely,

Richard W. Sprott, Executive Secretary
Utah Air Quality Board

RWS:JB:re

cc: Southeastern Utah District Health Department

INCORPORATED

MAY 17 2005

Div. of Oil, Gas & Mining

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER: Modification to Increase Coal Storage Area, Coal Throughput, and Diesel Fuel Usage at Wildcat Loadout

Prepared By: Jon Black, Engineer
(801) 536-4047
jlblack@utah.gov

APPROVAL ORDER NUMBER

DAQE-AN0113007-04

Date: December 3, 2004

Andalex Resources Incorporated
Source Contact
Michael W. Glasson
(435) 637-5385

Richard W. Sprott
Executive Secretary
Utah Air Quality Board

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

Abstract

Andalex Resources, Inc. (Andalex) submitted a Notice of Intent for a proposed increase in coal stockpile area, coal through put, and diesel consumption at the Wildcat Loadout. Andalex currently operates this facility under Approval Order DAQE-005-00. This plant is located in Carbon County, which is an attainment area of the National Ambient Air Quality Standards (NAAQS) for all pollutants. New Source Performance Standards (NSPS) Subpart Y (Standards of Performance for Coal Preparation Plants) applies to this source. National Emission Standards for Hazardous Air Pollutants (NESHAP) and Maximum Available Control Technology (MACT) regulations do not apply to this source. Title V of the 1990 Clean Air Act applies to this source.

The emissions, in tons per year, will increase as follows: PM_{10} (+) 3.76, NO_x (+) 3.68, SO_2 (+) 0.32, CO (+) 1.54, VOC (+) 0.34, Aldehydes (+) 0.07. The changes in emissions will result in the following, in tons per year, controlled potential to emit totals: PM_{10} = 25.77, NO_x = 18.40, SO_2 = 1.56, CO = 7.68, VOC = 1.69, and Aldehydes = 0.34.

The project has been evaluated and found to be consistent with the requirements of the Utah Administrative Code Rule 307 (UAC R307). A public comment period was held in accordance with UAC R307-401-4 and no comments were received. This air quality Approval Order (AO) authorizes the project with the following conditions, and failure to comply with any of the conditions may constitute a violation of this order

General Conditions:

1. This Approval Order (AO) applies to the following company:

Site Office	Corporate Office Location
Andalex Resources, Inc.	Andalex Resources, Inc.
5496 West 3550 North	P.O. Box 902
Spring Glen, Utah 84526	Price, Utah 84501
Phone Number	(435) 637-5385
Fax Number	(435) 637-8860

The equipment listed in this AO shall be operated at the following location:

The site is located approximately 10 miles north-northwest of Price, Utah. Travel on Highway 6 south from Helper 2.5 miles and turn right on to Consumers Road.

Universal Transverse Mercator (UTM) Coordinate System: UTM Datum NAD27
4,389 kilometers Northing; 507 kilometers Easting; Zone 12

2. All definitions, terms, abbreviations, and references used in this AO conform to those used in the Utah Administrative Code (UAC) Rule 307 (R307) and Title 40 of the Code of Federal Regulations (40 CFR). Unless noted otherwise, references cited in these AO conditions refer to those rules.

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

3. The limits set forth in this AO shall not be exceeded without prior approval in accordance with R307-401.

4. Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved in accordance with R307-401-1.

5. All records referenced in this AO or in applicable NSPS and/or NESHAP and/or MACT standards, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or Executive Secretary's representative upon request, and the records shall include the two-year period prior to the date of the request. Records shall be kept for the following minimum periods:

A.	Emission inventories	Five years from the due date of each emission statement or until the next inventory is due, whichever is longer.
B.	All other records	Two years

6. Andalex Resources, Inc. (Andalex) shall conduct and operate its operations of the Wildcat coal loadout facility in accordance with the terms and conditions of this AO, which was written pursuant to Andalex's Notice of Intent submitted to the Division of Air Quality (DAQ) on September 28, 2004.

7. This AO shall replace the AO (DAQE-005-00) dated January 5, 2000.

8. The approved installations shall consist of the following equipment or equivalent*:

A. Four (4) truck unloading facilities with below ground receiving hoppers and equipped with water sprays
B. Two coal crushers, each with a rated capacity of 250 tons per hour
C. Three sets of screehs, each set of screens with a rated capacity of 500 tons per hour
D. Four (4) radial stackers
E. Underpile reclaim system
F. Railcar loadout consisting of a tower and an extendable chute for loading railcars
G. Associated stockpiles, conveyors, and mobile equipment

* Equivalency shall be determined by the Executive Secretary.

Limitations and Tests Procedures

9. Visible emissions from any stationary point or fugitive emission source associated with the source or with the control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

For sources that are subject to New Source Performance Standards (NSPS), opacity shall be determined by conducting observations in accordance with 40 CFR 60.11(b) and 40 CFR 60, Appendix A, Method 9.

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

10. Visible fugitive dust emissions from haul-road traffic and mobile equipment in operational areas shall not exceed 20% opacity. Visible emissions determinations for traffic sources shall use procedures similar to Method 9. The normal requirement for observations to be made at 15-second intervals over a six-minute period, however, shall not apply. Six points, distributed along the length of the haul road or in the operational area, shall be chosen by the Executive Secretary or the Executive Secretary's representative. An opacity reading shall be made at each point when a vehicle passes the selected points. Opacity readings shall be made 1/2 vehicle length or greater behind the vehicle and at approximately 1/2 the height of the vehicle or greater. The accumulated six readings shall be averaged for the compliance value.

11. The following production and consumption limit shall not be exceeded:

A. 5,500,000 tons coal throughput per rolling 12-month period

B. 100,000 gallons fuel consumption for on-site diesel equipment per rolling 12-month period

To determine compliance with a rolling 12-month total the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of consumption/production shall be kept for all periods when the plant is in operation. Production shall be determined by records of coal received and fuel consumption shall be determined by fuel purchase invoices. The records of production shall be kept on a daily basis.

Roads and Fugitive Dust

12. The facility shall abide by all applicable requirements of R307-205 for Fugitive Emission and Fugitive Dust sources. The full text of R307-205, Emission Standards: Fugitive Emissions and Fugitive Dust is included as Appendix A. However, to be in compliance, this facility must operate in accordance with the most current version of R307-205.

13. All radial stackers shall stack at the highest point of the stockpile to minimize drop distances.

14. All conveyors shall be covered and all crushers shall be enclosed.

15. All unpaved roads and other unpaved operational areas that are used by mobile equipment shall be water sprayed and/or chemically treated to control fugitive dust. The application of water or chemical treatment shall be used. Treatment shall be of sufficient frequency and quantity to maintain the surface material in a damp/moist condition or unless it is below freezing. The opacity shall not exceed 20% during all times the areas are in use. If chemical treatment is to be used, the plan must be approved by the Executive Secretary. Records of water and/or chemical treatment shall be kept for all periods when the plant is in operation. The records shall include the following items:

A. Date
B. Number of treatments made, dilution ratio, and quantity

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

C. Rainfall received, if any, and approximate amount
D. Time of day treatments were made

16. The haul road limitations shall be:

A. 0.21 miles in length
B. 5 miles per hour

These limitations shall not be exceeded without prior approval in accordance with R307-401, UAC. The haul road speed shall be posted, at a minimum, on site at the beginning of the haul road so that it is clearly visible from the haul road.

17. Water sprays or chemical dust suppression sprays shall be installed at the following points to control fugitive emissions:

A. All truck unloading stations
B. All screens

The sprays shall operate whenever dry conditions warrant or as determined necessary by the Executive Secretary.

18. The moisture content of the material passing a #40 U.S. Standard Sieve shall be maintained at a minimum of 4.0% by weight. The moisture content shall be tested if directed by the Executive Secretary using the appropriate American Society of Testing and Methods (ASTM) method.

19. The storage piles shall be watered to minimize generation of fugitive dusts, as dry conditions warrant or as determined necessary by the Executive Secretary. Records of water and/or chemical treatment shall be kept for all periods when the plant is in operation. The total combined area of all storage piles shall not exceed 20.0 acres.

Fuels

20. The owner/operator shall use #1, #2 or a combination of #1 and #2 diesel fuel in the on-site equipment.

Federal Limitations and Requirements

21. In addition to the requirements of this AO, all applicable provisions of 40 CFR 60, New Source Performance Standards (NSPS) Subpart A, 40 CFR 60.1 to 60.18 (General Provisions) and Subpart Y, 40 CFR 60.250 to 60.254 (Standards of Performance for Coal Preparation Plants) apply to this installation (See Appendix B).

Records & Miscellaneous

22. At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this Approval Order including associated air pollution control equipment in a

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Executive Secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded.

23. The owner/operator shall comply with R307-150 Series. Inventories, Testing and Monitoring.

24. The owner/operator shall comply with R307-107. General Requirements: Unavoidable Breakdowns.

The Executive Secretary shall be notified in writing if the company is sold or changes its name.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including R307.

A copy of the rules, regulations and/or attachments addressed in this AO may be obtained by contacting the Division of Air Quality. The Utah Administrative Code R307 rules used by DAQ, the Notice of Intent (NOI) guide, and other air quality documents and forms may also be obtained on the Internet at the following web site:
http://www.airquality.utah.gov/

The annual emissions estimations below include point source, fugitive emissions, fugitive dust, road dust, and tail pipe emissions. These emissions are for the purpose of determining the applicability of Prevention of Significant Deterioration, non-attainment area, maintenance area, and Title V source requirements of the R307. They are not to be used for determining compliance.

The controlled Potential To Emit (PTE) emissions for this source (the entire plant) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	25.77
B.	SO_2	1.56
C.	NO_x	18.40
D.	CO	7.68
E.	VOC	1.69
F.	Aldehydes	0.34

Approved By

Richard W. Sprott, Executive Secretary
Utah Air Quality Board

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

Appendix A

Andalex Resources - Wildcat Loadout

R307. Environmental Quality, Air Quality.
R307-205. Emission Standards: Fugitive Emissions and Fugitive Dust.
R307-205-1. Applicability.

(1) Except where otherwise specified, R307-205 applies statewide.

(2) The provisions of R307-205 shall not apply to any sources for which limitations for fugitive dust or fugitive emissions are assigned pursuant to R307-401, R307-305, or R307-307 nor shall they apply to agricultural or horticultural activities.

(3) The following definitions apply throughout R307-205:
"Material" means sand, gravel, soil, minerals or other matter which may create fugitive dust.
"Road" means any public or private road.

R307-205-2. Fugitive Emissions.

Fugitive emissions from sources in areas outside Davis, Salt Lake and Utah Counties, Ogden City and any nonattainment area for PM10 and which were constructed before April 25, 1971, shall not exceed 40% opacity. Fugitive emissions from sources constructed after April 25, 1971, shall not exceed 20% opacity.

R307-205-3. Fugitive Dust.

(1) Storage and Handling of Aggregate Materials. Any person owning, operating or maintaining a new or existing material storage, handling or hauling operation shall minimize fugitive dust from such an operation. Such control may include the use of enclosures, covers, stabilization or other equivalent methods or techniques as approved by the Executive Secretary.

(2) Construction and Demolition Activities.

(a) Any person engaging in clearing or leveling of land greater than one-quarter acre in size, earthmoving, excavation, or movement of trucks or construction equipment over cleared land greater than one-quarter acre in size or access haul roads shall take steps to minimize fugitive dust from such activities. Such control may include watering and chemical stabilization of potential fugitive dust sources or other equivalent methods or techniques approved by the Executive Secretary.

(b) The owner or operator of any land area greater than one-quarter acre in size that has been cleared or excavated shall take measures to prevent fugitive particulate matter from becoming airborne. Such measures may include:

(i) planting vegetative cover,
(ii) providing synthetic cover,
(iii) watering,
(iv) chemical stabilization,
(v) wind breaks, or
(vi) other equivalent methods or techniques approved by the Executive Secretary.

(c) Any person engaging in demolition activities including razing homes, buildings, or other structures or removing paving material from roads or parking areas shall take steps to minimize fugitive dust from such activities. Such control may include watering and chemical stabilization or other equivalent methods or techniques approved by the Executive Secretary.

R307-205-4. Roads.

(1) Any person planning to construct or operate a new unpaved road which is anticipated to have an average daily traffic volume of 150 vehicle trips per day or greater, averaged over a consecutive five day period, shall submit a notice of intent to construct or operate such a road to the Executive Secretary pursuant to R307-401. Such notice shall include proposed action to minimize fugitive dust emissions from the road.

(2) The Executive Secretary may require persons owning, operating or maintaining any new or existing road, or having right-of-way easement or possessory right to use the same to supply traffic count information as determined necessary to ascertain whether or not control techniques are adequate or additional controls are necessary.

(3) Any person who deposits materials which may create fugitive dust on a public or private paved road shall clean the road promptly.

R307-205-5. Mining Activities.(1) Fugitive dust, construction activities, and roadways associated with mining activities are regulated under the provisions of R307-205-5 and not by R307-205-3 and 4.

(2) Any person who owns or operates a mining operation shall minimize fugitive dust as an integral part of site preparation, mining activities, and reclamation operations.

(3) The fugitive dust control measures to be used may include:

(a) periodic watering of unpaved roads,

INCORPORATED
MAY 17 2
Div. of Oil, Gas & Mining

(b) chemical stabilization of unpaved roads,
(c) paving of roads,
(d) prompt removal of coal, rock minerals, soil, and other dust-forming debris from roads and frequent scraping and compaction of unpaved roads to stabilize the road surface,
(e) restricting the speed of vehicles in and around the mining operation,
(f) revegetating, mulching, or otherwise stabilizing the surface of all areas adjoining roads that are a source of fugitive dust,
(g) restricting the travel of vehicles on other than established roads,
(h) enclosing, covering, watering, or otherwise treating loaded haul trucks and railroad cars, to minimize loss of material to wind and spillage,
(i) substitution of conveyor systems for haul trucks and covering of conveyor systems when conveyed loads are subject to wind erosion,
(j) minimizing the area of disturbed land,
(k) prompt revegetation of regraded lands,
(l) planting of special windbreak vegetation at critical points in the permit area,
(m) control of dust from drilling, using water sprays, hoods, dust collectors or other controls approved by the Executive Secretary.
(n) restricting the areas to be blasted at any one time,
(o) reducing the period of time between initially disturbing the soil and revegetating or other surface stabilization,
(p) restricting fugitive dust at spoil and coal transfer and loading points,
(q) control of dust from storage piles through use of enclosures, covers, or stabilization and other equivalent methods or techniques as approved by the Executive Secretary, or
(r) other techniques as determined necessary by the Executive Secretary.

(4) Any person owning or operating an existing mining operation in an actual area of nonattainment for particulate or an existing mining operation outside an actual area of nonattainment from which fugitive dust impacts an actual area of nonattainment for particulate shall submit plans for control of fugitive dust from such operations to the Executive Secretary for approval no later than September 29, 1981, 180 days after the effective date of this regulation.

R307-205-6. Tailings Piles and Ponds.

(1) Fugitive dust, construction activities, and roadways associated with tailings piles and ponds are regulated under the provisions of R307-205-6 and not by R307-205-3 and 4.

(2) Any person owning or operating an existing tailings operation where fugitive dust results from grading, excavating, depositing, or natural erosion or other causes in association with such operation shall take steps to minimize fugitive dust from such activities. Such controls may include:
(a) watering,
(b) chemical stabilization,
(c) synthetic covers,
(d) vegetative covers,
(e) wind breaks,
(f) minimizing the area of disturbed tailings,
(g) restricting the speed of vehicles in and around the tailings operation, or
(h) other equivalent methods or techniques which may be approvable by the Executive Secretary.

(3) Any person owning or operating an existing tailings operation in a nonattainment area for particulate or an existing mining operation outside an actual area of nonattainment from which fugitive dust impacts an actual area of nonattainment for particulate shall submit plans for control of fugitive dust from such operations to the Executive Secretary for approval no later than September 29, 1981, 180 days after the effective date of this regulation.

INCORPORATED
Div. of Oil, Gas & Mining

Appendix B

40 CFR 60 Subpart Y - Standards of Performance for Coal Preparation Plants

§ 60.250 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to any of the following affected facilities in coal preparation plants which process more than 200 tons per day: Thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, and coal transfer and loading systems.
(b) Any facility under paragraph (a) of this section that commences construction or modification after October 24, 1974, is subject to the requirements of this subpart.

[42 FR 37938, July 25, 1977; 42 FR 44812, Sept. 7, 1977]

§ 60.251 Definitions.

As used in this subpart, all terms not defined herein have the meaning given them in the Act and in subpart A of this part.
(a) Coal preparation plant means any facility (excluding underground mining operations) which prepares coal by one or more of the following processes: breaking, crushing, screening, wet or dry
cleaning, and thermal drying.
(b) Bituminous coal means solid fossil fuel classified as bituminous coal by ASTM Designation D388-77 (incorporated by reference-see § 60.17).
(c) Coal means all solid fossil fuels classified as anthracite, bituminous, subbituminous, or lignite by ASTM Designation D388-77 (incorporated by reference-see § 60.17).
(d) Cyclonic flow means a spiraling movement of exhaust gases within a duct or stack.
(e) Thermal dryer means any facility in which the moisture content of bituminous coal is reduced by contact with a heated gas stream which is exhausted to the atmosphere.
(f) Pneumatic coal-cleaning equipment means any facility which classifies bituminous coal by size or separates bituminous coal from refuse by application of air stream(s).
(g) Coal processing and conveying equipment means any machinery used to reduce the size of coal or to separate coal from refuse, and the equipment used to convey coal to or remove coal and refuse from the machinery. This includes, but is not limited to, breakers, crushers, screens, and conveyor belts.
(h) Coal storage system means any facility used to store coal except for open storage piles.
(i) Transfer and loading system means any facility used to transfer and load coal for shipment.

[41 FR 2234, Jan. 15, 1976, as amended at 48 FR 3738, Jan. 27, 1983]

§ 60.252 Standards for particulate matter.

(a) On and after the date on which the performance test required to be conducted by § 60.8 is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any thermal dryer gases which:
(1) Contain particulate matter in excess of 0.070 g/dscm (0.031 gr/dscf).
(2) Exhibit 20 percent opacity or greater.
(b) On and after the date on which the performance test required to be conducted by § 60.8 is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any pneumatic coal cleaning equipment, gases which:
(1) Contain particulate matter in excess of 0.040 g/dscm (0.018 gr/dscf).
(2) Exhibit 10 percent opacity or greater.
(c) On and after the date on which the performance test required to be conducted by § 60.8 is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit 20 percent opacity or greater.

[41 FR 2234, Jan. 15, 1976]

§ 60.253 Monitoring of operations.

(a) The owner or operator of any thermal dryer shall install, calibrate, maintain, and continuously operate monitoring devices as follows:

INCORPORATED

Oil, Gas & Mining

(1) A monitoring device for the measurement of the temperature of the gas stream at the exit of the thermal dryer on a continuous basis. The monitoring device is to be certified by the manufacturer to be accurate within ±3° Fahrenheit.

(2) For affected facilities that use venturi scrubber emission control equipment:

(i) A monitoring device for the continuous measurement of the pressure loss through the venturi constriction of the control equipment. The monitoring device is to be certified by the manufacturer to be accurate within ±1 inch water gage.

(ii) A monitoring device for the continuous measurement of the water supply pressure to the control equipment. The monitoring device is to be certified by the manufacturer to be accurate within ±5 percent of design water supply pressure. The pressure sensor or tap must be located close to the water discharge point. The Administrator may be consulted for approval of alternative locations.

(b) All monitoring devices under paragraph (a) of this section are to be recalibrated annually in accordance with procedures under § 60.13(b).

[41 FR 2234, Jan. 15, 1976, as amended at 54 FR 6671, Feb. 14, 1989]

§ 60.254 Test methods and procedures.

(a) In conducting the performance tests required in § 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in § 60.8(b).

(b) The owner or operator shall determine compliance with the particular matter standards in § 60.252 as follows:

(1) Method 5 shall be used to determine the particulate matter concentration. The sampling time and sample volume for each run shall be at least 60 minutes and 0.85 dscm (30 dscf). Sampling shall begin no less than 30 minutes after startup and shall terminate before shutdown procedures begin.

(2) Method 9 and the procedures in § 60.11 shall be used to determine opacity.

[54 FR 6671, Feb. 14, 1989]

INCORPORATED

MAY 17 2000

Div. of Oil, Gas & Mining

NSPORTATION COMMISSION

R. LAVAUN COX
CHAIRMAN
'NE S. WINTERS
.CE CHAIRMAN
CLEM H. CHURCH
SAMUEL J. TAYLOR
CHARLES C. CLAYBAUGH

ELVA H. ANDERSON
SECRETARY

WILLIAM D. HURLEY, P.E.
DIRECTOR

C.V. ANDERSON, P.E.
ASSISTANT DIRECTOR

R. JAMES NAEGLE, P.E.
ENGINEER FOR SAFETY

TELEPHONE:
801-965-4259

UTAH DEPARTMENT OF TRANSPORTATION

DIVISION OF SAFETY
4501 South 2700 West
Salt Lake City, Utah 84119

June 1, 1982

Dave Shaver
Chief Engineer
Tower Resources, Inc.
P.O. Box 1027
Price, Utah 84501

Dear Mr. Shaver:

This is in response to your petition on March 8, 1982, requesting a waiver of the Utah State Regulations of Clearances for your unit coal train loadout facility at Wildcat Junction.

After reviewing the plans submitted with your petition, and proposed method of car loading and switching we see no serious safety concerns. The Utah Railway Company has also indicated their complete concurrence with this construction. A variance is therefore approved, provided that adequate signing be installed before operation begins, to warn of impaired overhead and side clearances.

Thank you for your cooperation. If you have further questions, please contact our office.

Sincerely,

LeGrand O. Jones
Safety Regulations Administrator

cc: Dan Martin, Superintendent, Utah Railway

INCORPORATED
JUN 17 19
Div. of Oil, Gas & Mining

SOUTHEASTERN UTAH
DISTRICT HEALTH DEPARTMENT

6 East Main
P.O. Box 800
Price, Utah 84501
(801) 637-3671

P.O. Box 803, East Carbon, Utah 84520 - 888-4411
P.O. Box 844, Castle Dale, Utah 84513 - 748-2252
94 East Center, Moab, Utah 84532 - 259-5602
P.O. Box 127, Monticello, Utah 84535 - 587-2231 ext. 19
P.O. Box 545, Blanding, Utah 84511 - 678-2723

November 23, 1982

Mr. Mike Glasson
Tower Resources
P. O. Box 1027
Price, Utah 84501

Dear Mr. Glasson:

I have reviewed the plans for your proposed loadout facility. As drawn, the plans meet the requirements for onsite wastewater disposal systems.

The plans indicate that untreated building paper will be used as a barrier between the gravel bed and the earth backfill. While this is acceptable, we would recommend that straw be used instead of the paper. Because the paper must be untreated, it is very fragile and requires very careful backfilling to avoid injury to the paper. Straw is much easier to work with.

We only received one copy of the proposed plans and have retained that for our files. If you need additional copies stamped with our approval, we will be happy to stamp them.

When the work is completed, but before backfilling, please call me so that a final onsite inspection can be made.

Should there be any questions, please call me.

Sincerely,

Gerald C. Story

Gerald C. Story, Environmental Health Director
Southeastern Utah District Health Department

GCS/at

INCORPORATED
NOV 29
Div. of Oil, Gas & Mining

THE MATERIAL ORIGINALLY IN THIS APPENDIX HAS BEEN MOVED TO THE CONFIDENTIAL BINDER

THE MATERIAL ORIGINALLY IN THIS APPENDIX HAS BEEN MOVED TO THE CONFIDENTIAL BINDER

Form 33

STATE OF UTAH
NATURAL RESOURCES
Water Rights

1636 West North Temple • Salt Lake City, UT 84116 • 801-533-6071

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dee C. Hansen, State Engineer

September 28, 1984

Tower Resources Inc.
P.O. Box 902
Price, UT 84501

Dear Applicant:

RE: APPROVED APPLICATION
NUMBER 91-4303 (A59754)

Enclosed is a copy of the above-numbered approved Application. This is your authority to proceed with actual construction work which, under Sections 73-3-10 and 73-3-12, Utah Code Annotated, 1953, as amended, must be diligently prosecuted to completion. The water must be put to beneficial use and proof of appropriation be made to the State Engineer on or before the proof due date shown below otherwise, the application will be lapsed.

*** PROOF DUE DATE: February 28, 1988 ***

Proof of Appropriation is evidence to the State Engineer that the water has been placed to its full intended beneficial use. By law, it must be prepared by a registered engineer or land surveyor, who will certify to the location and the uses for the water. Your proof of appropriation will become the basis for the extent of your water right.

Failure on your part to comply with the requirements of the statutes may result in the forfeiture of this application.

Yours truly,

Dee C. Hansen

Dee C. Hansen, P.E.
State Engineer

Enclosure: Copy of Approved Application

Received
OCT 1 1984

Tower Resources Inc.

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

state of utah

DIVISION OF WILDLIFE RESOURCES

DOUGLAS F. DAY
Director

EQUAL OPPORTUNITY EMPLOYER

1596 West North Temple/Salt Lake City, Utah 84116/801-533-9333

Reply To SOUTHEASTERN REGIONAL OFFICE
455 West Railroad Avenue, Box 840, Price, Utah 84501
(801) 637-3310

September 24, 1984

Mr. Allen D. Emmel
Environmental Coordinator
Tower Resources, Inc.
P. O. Box 902
Price, UT 84501

Dear Allen:

In regard to the design that Tower Resources has proposed for the electric transmission poles to be placed at the Wildcat Junction, the following is offered for your consideration.

The flat, open terrain associated with the Wildcat siding is condusive to an abundant small mammal resource. As a result, numerous raptors are attracted to the area, particularly during the winter. It should be noted, however, that redtail hawks and golden eagles are year-long residents of that particular area. As a result, the raptor resource would certainly make use of power transmission poles. Therefore, the company's decision to construct poles that are designed to be as safe as practicable for raptors seems to be warranted.

In reviewing the design for the poles that you intend on placing, the Division finds that they are acceptable as safe raptor perching sites. I would recommend that you also have personnel from the U.S. Fish & Wildlife Service critique the plans as well.

Thank you for your consideration for Utah's wildlife resource.

Sincerely,

John Livesay

John Livesay, Supervisor
Southeastern Region

JL:LBD:db

cc: Darrell Nish
Clark Johnson, USFWS

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

GOVERNOR

DEPT. OF NATURAL RESOURCES
Gordon E. Harmston

WILDLIFE BOARD
Roy L. Young — Chairman
Lewis C. Smith
L. S. Shaw
Warren T. Harward
Chris F. J...

United States Department of the Interior

FISH AND WILDLIFE SERVICE
AREA OFFICE COLORADO—UTAH
1311 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138

Received
OCT 4 1984
Tower Resources Inc.

IN REPLY REFER TO:

(ES) October 3, 1984

Mr. Allen D. Emmel
Environmental Coordinator
Tower Resources, Inc.
P.O. Box 902
Price, Utah 84501

Dear Mr. Emmel:

We have reviewed the proposed design for your power transmission line at the Wildcat Junction railroad loadout and believe the design is generally satisfactory except for one needed modification.

We recommend that the ground wire have a 4 inch break 36-48 inches below the lowest conductor wire. As illustrated, some of the poles would have a close direct-line association between the conductor and a positive ground which could electrocute raptors attempting to perch on the insulator. This modification should reduce this hazard and still protect the system from lightning damage.

Please don't hesitate to contact us if we can be of further assistance.

Sincerely yours,

Acting Field Supervisor

cc: UWM-Price
BLM-Price

ufl -

INCORPORATED
MAY 17 2000
Div. of Oil, Gas & Mining

State of Utah

Department of
'ironmental Quality

Dianne R. Nielson, Ph.D.
Executive Director

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

JON M. HUNTSMAN, JR.
Governor

GARY HERBERT
Lieutenant Governor

November 16, 2006

RECEIVED
NOV 29 2006
OGM PRICE FIELD OFFICE

CERTIFIED MAIL
(Return Receipt Requested)

Mr. Mike Glasson
UtahAmerican Energy, Inc.
P.O. Box 1077
Price, UT 84501

Incoming
C/007/033
Copy Jim Smith and Pete Hess

Dear Mr. Glasson:

Subject: UPDES Permit Application Withdrawn -Wildcat Loadout.

On October 16, 2006, we received your application for an individual UPDES permit for the Wildcat Loadout. Pursuant to your telephone call and e-mail on November 15, 2006, you have requested to withdraw this application. The Wildcat Loadout will continue to be covered under the UPDES General Permit No. UTG040008. Your request has been acknowledged and we will consider this matter closed.

If you have any questions with regards to this matter, please contact Jeff Studenka of this office at (801) 538-6779 or by e-mail at jstudenka@utah.gov.

Sincerely,

Mike Herkimer

Mike Herkimer, Manager
UPDES Permits Section

MH:js:st

cc: Qian Zhang, EPA Region VIII
Claron Bjork, Southeastern Utah District Health
Dave Ariotti, SE District Engineer
Pam Grubaugh-Littig, Division of Oil Gas & Mines

F:\wp\GP-Coal Mines\Andelex-WildcatLoadout\2006covltr.doc

RECEIVED
NOV 21 2006
DIV. OF OIL, GAS & MINING

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

AUTHORIZATION TO DISCHARGE UNDER THE

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM
(UPDES)

GENERAL PERMIT FOR COAL MINING

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

Andelex Resources, Inc. - Wildcat Loadout

as identified in the application No. UTG040007 is authorized to discharge from all outfall(s) to receiving waters named:

Wildcat Wash

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

This permit shall become effective on May 1, 2003.

This permit and the authorization to discharge shall expire at midnight, April 30, 2008

Signed this 24th day of April, 2003.

Don A. Ostler
Executive Secretary
Utah Water Quality Board

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

TABLE OF CONTENTS

Cover Sheet--Issuance and Expiration Dates
I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS 3
A. Criteria for Inclusion in the General Permit for Coal Mining 3
B. Notice of Intent for General Permit for Coal Mining 3
C. Description of Discharge Point(s) 4
D. Narrative Standard 4
E. Specific Limitations and Self-monitoring Requirements. 4
F. Storm Water Requirements. 5
II. MONITORING, RECORDING AND REPORTING REQUIREMENTS 17
A. Representative Sampling 17
B. Monitoring Procedures 17
C. Penalties for Tampering 17
D. Reporting of Monitoring Results 17
E. Compliance Schedules 17
F. Additional Monitoring by the Permittee 17
G. Records Contents 17
H. Retention of Records 18
I. Twenty-four Hour Notice of Noncompliance Reporting 18
J. Other Noncompliance Reporting 19
K. Inspection and Entry 19
III. COMPLIANCE RESPONSIBILITIES 20
A. Duty to Comply 20
B. Penalties for Violations of Permit Conditions 20
C. Need to Halt or Reduce Activity not a Defense 20
D. Duty to Mitigate 20
E. Proper Operation and Maintenance 20
F. Removed Substances 20
G. Bypass of Treatment Facilities. 20
H. Upset Conditions 22
I. Toxic Pollutants 22
J. Changes in Discharge of Toxic Substances 22
K. Industrial Pretreatment 23
IV. GENERAL REQUIREMENTS 24
A. Planned Changes 24
B. Anticipated Noncompliance 24
C. Permit Actions 24
D. Duty to Reapply 24
E. Duty to Provide Information 24
F. Other Information 24
G. Signatory Requirements 24
H. Penalties for Falsification of Reports 25
I. Availability of Reports 25
J. Oil and Hazardous Substance Liability 25
K. Property Rights 25
L. Severability 25
M. Transfers 25
N. State Laws 26
O. Water Quality-Reopener Provision 26
P. Toxicity Limitation-Reopener Provision 26
V. GLOSSARY OF TERMS 27
A. Definitions. 27

INCORPORATED
EFFECTIVE
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING

I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

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

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

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

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

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

The NOI shall include:

1. A completed Environmental Protection Agency Application (EPA Form 3510-1) oequivalent information.

2. Location and identification number (such as 001, 002, etc.) of each existing discharge and/or proposed discharge point(s). this includes the latitude and longitude to the nearest 15 seconds and the name of the receiving water(s).

3. A description of the source of the wastewater for each discharge point.

4. A description of the treatment given or proposed for the wastewater at each discharge point and if necessary a justification of why no treatment is required.

5. Flow characteristics for each discharge point such as whether flow is or will be continuous or intermittent and indicate projected and/or actual average and maximum flows in gpd.

6. Data for each discharge point for the following parameters:

   a. Biochemical demand (BOD_5).
   b. Chemical oxygen demand (COD).
   c. Total organic carbon (TOC).
   d. Total suspended solids (TSS).
   e. Flow.
   f. Ammonia (as N).
   g. Oil and grease.
   h. Temperature.
   i. pH.
   j. Total dissolved solids (TDS).
   k. Total iron and metals, cyanide, phenols located in Table III UAC R317-8-3.12.
   l. For discharge(s) of mine water or mine water and mine water mixed with surface runoff one acute whole efficiency toxicity test using two species and full dilution series (five dilutions plus a control). Sediment pond discharges which have only surface runoff do not require WET tests.
   m. Date and time of sampling for each parameter.

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

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

For each discharge point the presence or absence of any toxic and/or priority pollutants as listed Table II, UAC R317-8-3.13.

C. Description of Discharge Point(s).

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

Outfall Number	Location of Discharge Point(s)
001	Sedimentation pond discharge to Wildcat Wash. Latitude 39°39'11", Longitude 110°54'56".
002	Sedimentation Pond discharge to Wildcat Wash. Latitude 39°39'16", Longitude 110°54'58".
003	Sedimentation pond discharge to Wildcat Wash. Latitude 39°39'21", Longitude 110°54'53".
004	Sedimentation pond discharge to Wildcat Wash. Latitude 39°39'28", Longitude 110°54'53".
005	Sedimentation pond discharge to Wildcat Wash. Latitude 39°39'34", Longitude 110°54'53".
006	Sedimentation pond discharge to Wildcat Wash. Latitude 39°39'14", Longitude 110°55'11".

INCORPORATED
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

D. Narrative Standard.

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

E. Specific Limitations and Self-monitoring Requirements.

1. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall(s) 001 through 006. Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Discharge Limitations a/ Average 30-Day	7-Day	Daily Maximum	Monitoring Requirements Measurement Frequency	Sample Type
Flow, MGD	N/A	N/A	NA	Monthly	Measured b/
Oil & Grease, mg/L	N/A	N/A	10c/	Monthly	Grab
Total Iron, mg/L	N/A	N/A	1.0	Monthly	Grab e/
Total Suspended Solids, mg/L	25	35	70	Monthly	Grab e/
Total Dissolved Solids, mg/L	500 d/	N/A	NA	Monthly	Grab e/

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units in any sample and shall be monitored monthly by a grab sample.

There shall be no visible sheen or floating solids or visible foam in other than trace amounts.

There shall be no discharge of sanitary wastes or process water from coal preparation plants.

N.A. - Not Applicable.

a/ See Definitions, *Part I.A* for definition of terms.

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

c/ If a visual sheen for oil and grease is observed then a grab sample must be taken immediately and the results shall not exceed 10 mg/L.

d/ If each outfall cannot achieve a 30-day average of 500 mg/L, then the permittee is limited to one ton (2000 lbs) per day as a sum from all outfalls.

e/ These samples may also be a composite sample

RECEIVED
EFFECTIVE:
MAY 17 2006
DIV OF OIL, GAS & MINING
PRICE FIELD OFFICE

2. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the final effluent before mixing with the receiving water.

3. Any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period less than or equal to the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) at outfall(s) 001 through 006 may comply with the following limitations instead of the otherwise applicable limitations for TSS and pH in Part I.E.1:

Effluent Characteristics	Daily Maximum
Settleable Solids	0.5 ml/L
pH	6.5 to 9.0 S.U.

In addition to the monitoring requirements specified under Part I.E.1 all effluent samples collected during storm water discharge events shall also be analyzed for settleable solids. Such analyses shall be conducted monthly by grab samples.

4. Any discharge or increase in the volume of a discharge caused by precipitation within any 24 hour period greater than the 10-year, 24 hour precipitation event (or snowmelt of equivalent volume) at outfall(s) 001 through 006 may comply with the following limitations instead of the otherwise applicable limitations:

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units. However as stated in Part I.E.3, all effluent samples collected during storm-water discharge events shall be analyzed for settleable solids and parameters identified under Part I.E.1.

5. The operator shall have the burden of proof that the discharge or increase in discharge was caused by the applicable precipitation event described in Parts I.E.3 and 4. The alternate limitations in Parts I.E.3 and 4 shall not apply to treatment systems that treat underground mine water only.

F. Storm Water Requirements. . It has been determined that Wildcat Loadout has a regulated storm water discharge as per UAC R317-8-3.9., therefore, the following permit conditions governing storm water discharges apply.

1. Coverage of This Section.

a. Discharges Covered Under This Section. The requirements listed under this section shall apply to storm water discharges from Wildcat Loadout, subject to effluent limitations listed in Part I.E. of this permit.

1) Site Coverage. Storm water discharges from the following portions of Wildcat Loadout may be eligible for this permit: haul roads (nonpublic roads on which coal or coal refuse is conveyed), access roads (nonpublic roads providing light vehicular traffic within the facility property and to public roadways), railroad spurs, sidings, and internal haulage lines (rail lines used for hauling coal within the facility property and to offsite commercial railroad lines or loading areas), conveyor belts, chutes, and aerial tramway haulage areas (areas under and around coal or refuse conveyor areas, including transfer stations), equipment storage and maintenance yards, coal handling buildings and structures, and inactive coal mines and related areas (abandoned and other inactive mines, refuse disposal sites and other mining-related areas on private lands).

RECEIVED
MAY 17 2006
DIV. OF OIL, GAS & MINING

2. Prohibition of Non-storm Water Discharges.

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

3. Storm Water Pollution Prevention Plan Requirements. Most of the active coal mining-related areas, described in paragraph 1. above, are subject to sediment and erosion control regulations of the U.S. Office of Surface Mining (OSM) that enforces the Surface Mining Control and Reclamation Act (SMCRA). OSM has granted authority to the Utah Division of Oil Gas and Mining (DOGM) to implement SMCRA through State SMCRA regulations. All SMCRA requirements regarding control of erosion, siltation and other pollutants resulting from storm water runoff, including road dust resulting from erosion, shall be primary requirements of the pollution prevention plan and shall be included in the contents of the plan directly, or by reference. Where determined to be appropriate for protection of water quality, additional sedimentation and erosion controls may be warranted.

a. Contents of Plan. The plan shall include at a minimum, the following items:

1) Pollution Prevention Team. Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water

Pollution Prevention Team that are responsible for developing the storm water pollution prevention plan and assisting the facility manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.

2) Description of Potential Pollutant Sources. Each plan shall provide a description of potential sources that may reasonably be expected to add significant amounts of pollutants to storm water discharges or that may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials that may potentially be significant pollutant sources. Each plan shall include, at a minimum:

a) Deadlines for Plan Preparation and Compliance
Wildcat Loadout shall prepare and implement a plan in compliance with the provisions of this section within 270 days of the effective date of this permit.

b) Keeping Plans Current

Wildcat Loadout shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the State or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified by the plan, or in otherwise achieving the general objectives of controlling pollutants in storm water discharges associated with the activities at the mine.

c) Drainage.

(1) A site map, such as a drainage map required for SMCRA permit applications, that indicate drainage areas and storm water outfalls. These shall include but not be limited to the following:

(a) Drainage direction and discharge points from all applicable mining-related areas described in paragraph 1.a(1). (Site Coverage) above, including culvert and sump discharges from roads and rail beds and also from equipment and maintenance areas subject to storm runoff of fuel, lubricants and other potentially harmful liquids.

(b) Location of each existing erosion and sedimentation control structure or other control measures for reducing pollutants in storm water runoff.

(c) Receiving streams or other surface water bodies.

(d) Locations exposed to precipitation that contain acidic spoil, refuse or unreclaimed disturbed areas.

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

(e) Locations where major spills or leaks of toxic or hazardous pollutants have occurred.

(f) Locations where liquid storage tanks containing potential pollutants, such as caustics, hydraulic fluids and lubricants, are exposed to precipitation.

(g) Locations where fueling stations, vehicle and equipment maintenance areas are exposed to precipitation.

(h) Locations of outfalls and the types of discharges contained in the drainage areas of the outfalls.

(2) For each area of the facility that generates storm water discharges associated with the mining-related activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow, and an identification of the types of pollutants that are likely to be present in storm water discharges associated with the activity. Factors to consider include the toxicity of the pollutant; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified.

d) Inventory of Exposed Materials. An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.

e) Spills and Leaks. A list of significant spills and leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility beginning 3 years prior to the effective date of this permit. Such list shall be updated as appropriate during the term of the permit.

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL GAS AND MINING
PRICE FIELD OFFICE

f) Sampling Data. A summary of any existing discharge sampling data describing pollutants in storm water discharges from the portions of Wildcat Loadout covered by this permit, including a summary of any sampling data collected during the term of this permit.

g) Risk Identification and Summary of Potential Pollutant Sources. A narrative description of the potential pollutant sources from the following activities: truck traffic on haul roads and resulting generation of sediment subject to runoff and dust generation; fuel or other liquid storage; pressure lines containing slurry, hydraulic fluid or other potential harmful liquids; and loading or temporary storage of acidic refuse or spoil. Specific potential pollutants shall be identified where

known.

3) Measures and Controls. Wildcat Loadout shall develop a description of storm water management controls appropriate for the facility and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at Wildcat Loadout. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls.

a) Good Housekeeping. Good housekeeping requires the maintenance of areas that may contribute pollutants to storm water discharges in a clean, orderly manner. These are practices that would minimize the generation of pollutants at the source or before it would be necessary to employ sediment ponds or other control measures at the discharge outlets. Where applicable, such measures or other equivalent measures would include the following: sweepers and covered storage to minimize dust generation and storm runoff; conservation of vegetation where possible to minimize erosion; watering of haul roads to minimize dust generation; collection, removal, and proper disposal of waste oils and other fluids resulting from vehicle and equipment maintenance; or other equivalent measures.

b) Preventive Maintenance. A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems. Where applicable, such measures would include the following: removal and proper disposal of settled solids in catch basins to allow sufficient retention capacity; periodic replacement of siltation control measures subject to deterioration such as straw bales; inspections of storage tanks and pressure lines for fuels, lubricants, hydraulic fluid or slurry to prevent leaks due to deterioration or faulty connections; or other equivalent measures.

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

c) Spill Prevention and Response Procedures. Areas where potential spills that can contribute pollutants to storm water discharges can occur, and their accompanying drainage points shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures for cleaning up spills shall be identified in the plan and made available to the appropriate personnel. The necessary equipment to implement a clean up shall be available to personnel.

d) Inspections. In addition to or as part of the comprehensive site evaluation required under paragraph 3.a.(4) of this section, qualified facility personnel shall be identified to inspect designated areas of the facility at appropriate intervals specified in the plan. The following shall be included in the plan:

(1) Active Mining-Related Areas and Those Inactive Areas Under

SMCRA Bond Authority. The plan shall require quarterly inspections by the facility personnel for areas of the facility covered by pollution prevention plan requirements. This inspection interval corresponds with the quarterly inspections for the entire facility required to be provided by SMCRA authority inspectors for all mining-related areas under SMCRA authority, including sediment and erosion control measures. Inspections by the facility representative may be done at the same time as the mandatory inspections performed by SMCRA inspectors. Records of inspections of the SMCRA authority facility representative shall be maintained.

(2) Inactive Mining-Related Areas Not Under SMCRA Bond. The plan shall require annual inspections by the facility representative except in situations referred to in paragraph 3.a.(4)(d) below.

(3) Inspection Records. The plan shall require that inspection records of the facility representative and those of the SMCRA authority inspector shall be maintained. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections.

e) Employee Training. Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The pollution prevention plan shall identify periodic dates for such training.

INCORPORATED
EFFECTIVE
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING

f) Record keeping and Internal Reporting Procedures. A description of incidents (such as spills, or other discharges) along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.

g) Non-storm Water Discharges.

(1) Certification. The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges such as drainage from underground portions of inactive mines or floor drains from maintenance or coal handling buildings. The certification shall include the identification of potential significant sources of non-storm water discharges at the site, a description of the results of any test and/or evaluation, a description of the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed in accordance with Part IV.G.4. of this permit.

(2) Exceptions. Except for flows from fire fighting activities, authorized sources of non-storm water listed in Part I.F.2.a. that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

(3) Failure to Certify. If Wildcat Loadout is unable to provide the certification required (testing or other evaluation for non-storm water discharges), the Executive Secretary must be notified within 180 days after the effective date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water to the storm discharge lines; and why adequate tests for such storm discharge lines were not feasible. Non-storm water discharges to waters of the State that are not authorized by a UPDES permit are unlawful, and must be terminated.

h) Sediment and Erosion Control. The plan shall identify areas that, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion and reduce sediment concentrations in storm water discharges. As indicated in paragraph I.F.3. above, SMCRA requirements regarding sediment and erosion control measures are primary requirements of the pollution prevention plan for mining-related areas subject to SMCRA authority. The following sediment and erosion control measures or other equivalent measures, should be included in the plan where reasonable and appropriate for all areas subject to storm water runoff:

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

(1) Stabilization Measures. Interim and permanent stabilization measures to minimize erosion and lessen amount of structural sediment control measures needed, including: mature vegetation preservation; temporary seeding; permanent seeding and planting; temporary mulching, matting, and netting; sod stabilization; vegetative buffer strips; temporary chemical mulch, soil binders, and soil palliatives; nonacidic road surfacing material; and protective trees.

(2) Structural Measures. Structural measures to lessen erosion and reduce sediment discharges, including: silt fences; earth dikes; straw dikes; gradient terraces; drainage swales; sediment traps; pipe slope drains; porous rock check dams; sedimentation ponds; riprap channel protection; capping of contaminated sources; and physical/chemical treatment of storm water.

i) Management of Flow. The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices

(other than those as sediment and erosion control measures listed above) used to manage storm water runoff in a manner that reduces pollutants in storm water runoff from the site. The plan shall provide that the measures, which the permittee determines to be reasonable and appropriate, shall be implemented and maintained. Appropriate measures may include: discharge diversions; drainage/storm water conveyances; runoff dispersion; sediment control and collection; vegetation/soil stabilization; capping of contaminated sources; treatment; or other equivalent measures.

4) Comprehensive Site Compliance Evaluation. Qualified personnel shall conduct site compliance evaluations at intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:

a) Areas contributing to a storm water discharge associated with coal mining-related areas shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. These areas include haul and access roads; railroad spurs, sidings, and internal haulage lines; conveyor belts, chutes and aerial tramways; equipment storage and maintenance yards; coal handling buildings and structures; and inactive mines and related areas. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures, as indicated in paragraphs 3.a.(3)(h) and 3.a.(3)(i) above and where identified in the plan, shall be observed to ensure that they are operating correctly. A visual evaluation of any equipment needed to implement the plan, such as spill response equipment, shall be made.

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

b) Based on the results of the evaluation, the description of potential pollutant sources identified in the plan, in accordance with paragraph 3.a.(2) of this section, and pollution prevention measures and controls identified in the plan, in accordance with paragraph 3.a.(3) of this section, shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in a timely manner. For inactive mines, such revisions may be extended to a maximum of 12 weeks after the evaluation.

c) A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with paragraph 3.a.(4)(b) above shall be made and retained as part of the storm water pollution prevention plan for at least 3 years after the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with Part IV.G.4. (Signatory Requirements) of this permit.

d) Where compliance evaluation schedules overlap with inspections

required under 3.a.(3)(d), the compliance evaluation may be conducted in place of one such inspection. Where annual site compliance evaluations are shown in the plan to be impractical for inactive mining sites due to the remote location and inaccessibility of the site, site inspections required under this part shall be conducted at appropriate intervals specified in the plan, but, in no case less than once in 3 years.

4. Numeric Effluent Limitations. There are no additional numeric effluent limitations beyond those described in Part I.E. of this permit.

5. Monitoring and Reporting Requirements.

a. Benchmark Analytical Monitoring Requirements. Wildcat Loadout must monitor their storm water discharges associated with industrial activity at least quarterly (4 times per year) during years 2 and 4 of the permit cycle except as provided in paragraphs 5.a.(3) (Sampling Waiver), 5.a.(4) (Representative Discharge), and 5.a.(5) (Alternative Certification). Wildcat Loadout is required to monitor their storm water discharges for the pollutants of concern listed in Table E. below. Reports must be made in accordance with 5.b. (Reporting). In addition to the parameters listed in Table E. below, Wildcat Loadout measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume (in gallons) of the discharge sampled.

The results of benchmark monitoring are primarily for Wildcat Loadout's use to determine the overall effectiveness of the SWPPP in controlling the discharge of pollutants to receiving waters. Benchmark values are not viewed as permit limitations. An exceedance of a benchmark value does not, in and of itself, constitute a violation of this permit. While exceedance of a benchmark value does not automatically indicate a violation of a water quality standard has occurred, it does signal that modifications to the SWPPP or more specific pollution prevention controls may be necessary.

Table E.
Monitoring Requirements for Coal Mining Facilities

Pollutants of Concern	Cut-Off Concentration
Total Recoverable Aluminum	0.75 mg/L
Total Recoverable Iron	1.0 mg/L
Total Suspended Solids	100 mg/L

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING

1) Monitoring Periods. Wildcat Loadout shall monitor samples collected during the sampling periods of: January through March, April through June, July through September, and October through December during the second and fourth years of this permit cycle.

2) Sample Type. A minimum of one grab sample shall be taken. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. The required 72-hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge from the facility. The required 72-hour storm event interval may also be waived where Wildcat Loadout documents that less than a 72-hour interval is representative for local storm events during the

season when sampling is being conducted. The grab sample shall be taken during the first 30 minutes of the discharge. If the collection of a grab sample during the first 30 minutes is impracticable, a grab sample can be taken during the first hour of the discharge, and the discharger shall submit with the monitoring report a description of why a grab sample during the first 30 minutes was impracticable. If storm water discharges associated with industrial activity commingle with process or nonprocess water, then where practicable permittees must attempt to sample the storm water discharge before it mixes with the non-storm water discharge.

3) Sampling Waiver.

a) Adverse Conditions. If Wildcat Loadout is unable to collect samples within a specified sampling period due to adverse climatic conditions, thus a substitute sample shall be collected from a separate qualifying event in the next monitoring period and the data submitted along with the data for the routine sample in that period. Adverse weather conditions that may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricanes, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

b) Low Concentration Waiver. When the average concentration for a pollutant calculated from all monitoring data collected from an outfall during the second year monitoring is less than the corresponding value for that pollutant listed in Table E. under the column Monitoring Cut-Off Concentration, Wildcat Loadout may waive monitoring and reporting requirements for the fourth year monitoring period. Wildcat Loadout must submit to the Executive Secretary, in lieu of the monitoring data, a certification that there has not been a significant change in industrial activity or the pollution prevention measures in area of the facility that drains to the outfall for which sampling was waived.

RECEIVED
MAY 17 2006
DIV. OF OIL, GAS & MINING

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

c) Inactive and Unstaffed Site. If Wildcat Loadout is unable to conduct quarterly chemical storm water sampling at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirements as long as the facility remains inactive and unstaffed monitoring data, a certification statement on the Storm Water Discharge Monitoring Report (SWDMR) stating that the site is inactive and unstaffed so that collecting a sample during a qualifying event is not possible.

4) Representative Discharge. If the facility has two or more outfalls that, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by the outfall, discharge substantially identical effluents, Wildcat Loadout may test the effluent of one of such outfalls and report that the quantitative data also applies to the substantially identical outfall(s) provided that Wildcat Loadout includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that Wildcat Loadout believes is representative, an estimate of the size of the drainage area (in square feet) and an

estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan. Wildcat Loadout shall include the description of the location of the outfalls, explanation of why outfalls are expected to discharge substantially identical effluents, and estimate of the size of the drainage area and runoff coefficient with the SWDMR.

5) Alternative Certification. Wildcat Loadout is not subject to the monitoring requirements of this section provided that certification is made for a given outfall or on a pollutant-by-pollutant basis in lieu of monitoring reports required under paragraph b. below, under penalty of law, signed in accordance with Part IV.G.4. (Signatory Requirements). The Certification shall state that material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, industrial machinery or operations, or significant materials from past industrial activity that are located in areas of the facility within the drainage area of the outfall are not presently exposed to storm water and are not expected to be exposed to storm water for the certification period. Such certification must be retained in the storm water pollution prevention plan, and submitted to DWQ in accordance with Part II.D. of this permit. In the case of certifying that a pollutant is not present, Wildcat Loadout must submit the certification along with the monitoring reports required under paragraph b. below. If Wildcat Loadout cannot certify for an entire period, they must submit the date exposure was eliminated and any monitoring required up until that date. This certification option is not applicable to compliance monitoring requirements associated with effluent limitations.

b. Reporting. Wildcat Loadout shall submit monitoring results for each outfall associated with industrial activity [or a certification in accordance with Sections (3), (4), or (5) above] obtained during the second year reporting period, on Storm Water Discharge Monitoring Report (SWDMR) form(s) postmarked no later than the 31st day of the following March. Monitoring results [or a certification in accordance with Sections (3), (4), or (5) above] obtained during the fourth year reporting period shall be submitted on SWDMR form(s) postmarked no later than the 31st day of the following March. For each outfall, one signed SWDMR form must be submitted to the Executive Secretary per storm event sampled. Signed copies of SWDMRs, or said certifications, shall be submitted to the Executive Secretary at the address listed in Part II.D. of the permit.

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

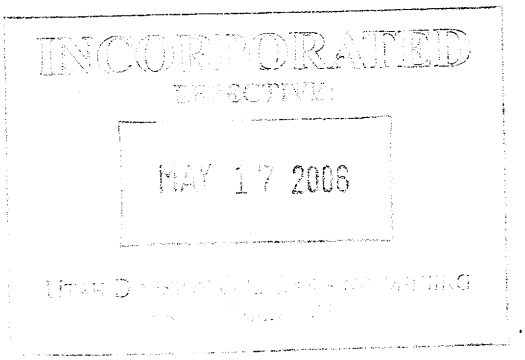
c. Visual Examination of Storm Water Quality. Wildcat Loadout shall perform and document a visual examination of a representative storm water discharge at the following frequencies: quarterly for active areas under SMCRA bond located in areas with average annual precipitation over 20 inches; semi-annually for inactive areas under SMCRA bond, and active areas under SMCRA bond located in areas with average annual precipitation of 20 inches or less; visual examinations are not required at inactive areas not under SMCRA bond.

1) Visual Monitoring Periods. Examinations shall be conducted in each of the following periods for the purposes of visually inspecting storm water runoff or snow melt: Quarterly-January through March; April through June; July through September; and October through December. Semi-annually—January through June and July through December.

2) Sample and Data Collection. Examinations shall be made of samples collected within the first 60 minutes (or as soon thereafter as practical, but not to exceed

two hours) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well-lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual will carry out the collection and examination of discharges for the life of the permit.

3) Visual Storm Water Discharge Examination Reports. Visual examination reports must be maintained onsite in the pollution prevention plan. The report shall include the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.



MONITORING, RECORDING AND REPORTING REQUIREMENTS

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

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

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

D. Reporting of Monitoring Results. Monitoring results obtained during the previous month shall be summarized for each month and reported monthly on a Discharge Monitoring Report Form (EPA No. 3320-1), post-marked no later than the 28th day of the month following the completed reporting period. The first report is due on June 28, 2003. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part IV.G)*, and submitted to the Director, Division of Water Quality:

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

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

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

G. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements:
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING

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

I. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance which may seriously endanger health or environment as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 538-6146, or 24 hour answering service (801) 536-4123.

2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4123 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:

   a. Any noncompliance which may endanger health or the environment;

   b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See *Part III.G, Bypass of Treatment Facilities.)*;

   c. Any upset which exceeds any effluent limitation in the permit (See *Part III.H, Upset Conditions.*); or,

   d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit.

3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected; and,

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

   e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.

4. The Executive Secretary may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, (801) 538-6146.

5. Reports shall be submitted to the addresses in *Part II.D, Reporting of Monitoring Results.*

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

J. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part II.D* are submitted. The reports shall contain the information listed in *Part II.I.3*.

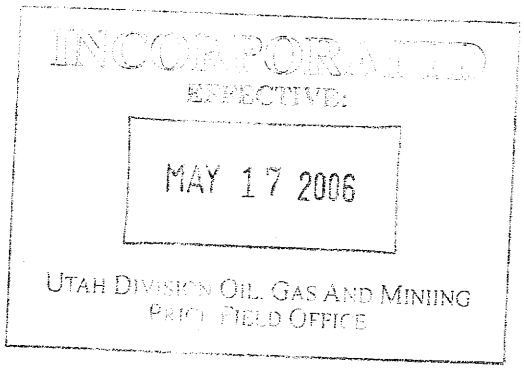
K. Inspection and Entry. The permittee shall allow the Executive Secretary, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location.



III COMPLIANCE RESPONSIBILITIES

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

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

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

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

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

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

G. Bypass of Treatment Facilities.

1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to 2. and 3. of this section.

2. Prohibition of Bypass.

   a. Bypass is prohibited, and the Executive Secretary may taken enforcement action against a permittee for bypass, unless:

      (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING

(2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and

(3) The permittee submitted notices as required under section G.3.

b. The executive Secretary may approve an anticipated bypass, after considering its adverse effects, if the Executive Secretary determines that it will meet the three conditions listed in sections G.2a. (1), (2) and (3).

3. Notice.

a. Anticipated bypass. Except as provided above in section G.2. and below in section G. 3.b, if the permittee knows in advance of the need for a bypass, it shall submit prior notice, at least ninety days before the date of bypass. The prior notice shall include the following unless otherwise waived by the Executive Secretary:

(1) Evaluation of alternative to bypass, including cost-benefit analysis containing an assessment of anticipated resource damages:

(2) A specific bypass plan describing the work to be performed including scheduled dates and times. The permittee must notify the Executive Secretary in advance of any changes to the bypass schedule;

(3) Description of specific measures to be taken to minimize environmental and public health impacts;

(4) A notification plan sufficient to alert all downstream users, the public and others reasonably expected to be impacted by the bypass;

(5) A water quality assessment plan to include sufficient monitoring of the receiving water before, during and following the bypass to enable evaluation of public health risks and environmental impacts; and

(6) Any additional information requested by the Executive Secretary.

b. Emergency Bypass. Where ninety days advance notice is not possible, the permittee must notify the Executive Secretary, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Executive Secretary the information in section G.3.a.(1) through (6i) to the extent practicable.

c. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass to the Executive Secretary as required under Part II.I., Twenty Four Hour Reporting. The permittee shall also immediately notify the Director of the Department of Natural Resources, the public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

INCORPORATED
EFFECTIVE
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of paragraph 2. of this section are met. Executive Secretary's administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under Part II.I, Twenty-four Hour Notice of Noncompliance Reporting; and,

   d. The permittee complied with any remedial measures required under Part III.D, Duty to Mitigate.

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

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

J. Changes in Discharge of Toxic Substances. Notification shall be provided to the Executive Secretary as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. One hundred micrograms per liter (100 ug/L);

   b. Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

   c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(7)* or (10); or,

   d. The level established by the Executive Secretary in accordance with *UAC R317-8-4.2(6).*

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

APPROVED
EFFECTIVE:
MAY 17 2006

a. Five hundred micrograms per liter (500 ug/L);

b. One milligram per liter (1 mg/L) for antimony:

c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(9)*; or,

d. The level established by the Executive Secretary in accordance with *UAC R317-8-4.2(6)*.

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

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

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

IV. GENERAL REQUIREMENTS

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

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

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

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

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

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

G. Signatory Requirements. All applications, reports or information submitted to the Executive Secretary shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer or ranking elected official

2. All reports required by the permit and other information requested by the Executive Secretary shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described above and submitted to the Executive Secretary, and,

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

3. Changes to authorization. If an authorization under paragraph IV.G.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph IV.G.2 must be submitted to the Executive Secretary prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

INCORPORATED
EFFECTIVE:
MAY 17 2006
UTAH DIVISION OIL, GAS AND MINING
PRICE FIELD OFFICE

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

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

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

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

L. Severability. The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Executive Secretary at least 20 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Executive Secretary does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

N. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by *UCA 19-5-117.*

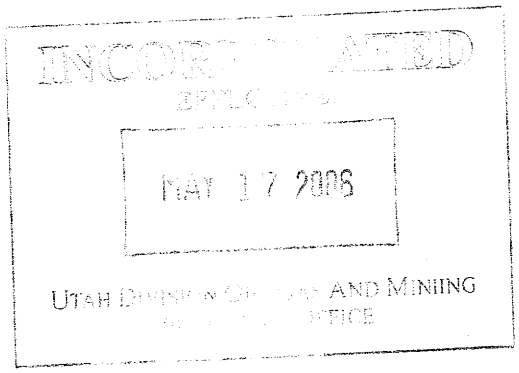
O. Water Quality-Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.

2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.

3. A revision to the current Water Quality Management Plan is approved and adopted which calls for different effluent limitations than contained in this permit.

P. Toxicity Limitation-Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include whole effluent toxicity (WET) testing, a WET limitation, a compliance schedule, a compliance date, additional or modified numerical limitations, or any other conditions related to the control of toxicants if toxicity is detected during the life of this permit.



GLOSSARY OF TERMS

A. Definitions.

1. The "30-day (and monthly) average" is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.

2. The "7-day (and weekly) average" is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self- monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains the Saturday.

3. "Daily Maximum" ("Daily Max.") is the maximum value allowable in any single sample or instantaneous measurement.

4. "Composite samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the composite sample period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:

   a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;

   b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;

   c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,

   d. Continuous collection of sample, with sample collection rate proportional to flow rate.

5. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.

6. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.

7. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

RECEIVED
MAY 17 2006
UTAH DIVISION OF OIL, GAS AND MINING

8. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

9. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. "Executive Secretary" means Executive Secretary of the Utah Water Quality Board.

11. "EPA" means the United States Environmental Protection Agency.

12. "Act" means the "*Utah Water Quality Act*".

13. "Best Management Practices" ("*BMPs*") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. *BMPs* also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

14. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.

15. "*CWA*" means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987.*

16. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agriculture storm water runoff.

17. "Significant spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under *Section 311* of the *Clean Water Act* (see *40CFR 110.10* and *40 CFR 117.21)* or *Section 102* of the *CERCLA* (see *40 CFR 302.4).*

18. "Storm water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

19. "Waste pile" means any noncontainerized accumulation of solid, nonflowing waste that is used for treatment or storage.

20. "10-year, 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable reoccurrence interval of once in 10 years. This information is available in *Weather Bureau Technical Paper no. 40,* May 1961 and *NOAA Atlas 2,* 1973 for the 11 Western States, and may be obtained from the National Climatic center of the Environmental Data Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

21. The term "coal preparation plant" means a facility where coal is crushed, screened, sized and cleaned, dried, or otherwise prepared and loaded for transit to a consuming facility.

22. The term "coal preparation plant associated areas" means the coal preparation plant yards, immediate access roads, coal refuse piles, and coal storage piles and facilities.

INCORPORATED
RECEIVED
MAY 17 2006

APPENDIX B, PART B

VIOLATION INFORMATION

Tab 33

Appendix B
Part B

History of Violations

VIOLATION INFORMATION

Information updated to February, 2008

Name of Operation	Identifying number for operation	Federal or State Permit Number	MSHA ID Number
Tower		007/019	42-01750 42-01474 42-02028 42-01864

Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N
9/27/2006	10000	DOGM			Failure to renew	9/29/2006	terminated	N
10/6/2006	10002	DOGM			Failure to submit fan plan	12/4/2006	terminated	N
2/7/2007	10003	DOGM			Non coal Waste	2/12/2007	terminted	N
7/6/2007	10007	DOGM			Vehicle in ditch	7/06/07	terminated	N
8/27/2007	10008	DOGM			vehicle in ditch	8/28/2007	terminated	N
8/27/2007	10009	DOGM			no sed pond inspection	8/27/07	terminated	N

Name of Operation	Identifying number for operation	Federal or State Permit Number	MSHA ID Number
Crandall		015/032	42-01715

Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N
8/19/2004	Nov4-49-4-1	DOGM			Parking in Forest	Term	moved vehicle	N
9/13/2004	Nov4-49-5-1	DOGM			non-coal waste	Term	moved waste	N
9/8/2005	Nov5-49-2-1	DOGM			Failure annual subsidene	Term		N
10/4/2006	#10001	DOGM			Culvet Plugged	TErm	Unplugged	N
9/6/2007	10014	DOGM			no sed pond inspection	TERM	Inspected	N
9/10/2007	10015	DOGM			plugged culvert	term	unplugged	N
1/14/2008	10016	DOGM			mine water stored in pond	Term	rerouted water	N
1/14/2008	10017	DOGM			grvity flow fro m portals	Term	stopped flow	N
2/06/2008	10019	DOGM			failure to request permit renewal			

Name of Operation	Identifying number for operation	Federal or State Permit Number	MSHA ID Number
West Ridge		007/041	42-02233

Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N
1/22/2004	Nov4-49-1-1	DOGM			Failure to request renewal	Term		N
4/6/2005	Nov5-39-1-1	DOGM			Failure to submit 4qtr water	Term		N

Name of Operation			Identifying number for operation			Federal or State Permit Number	MSHA ID Number
Canterbury Coal Inc.			644			D-024-1/S-1020	3600813/3605708
Date Issued	**Violation Number**	**Name of Issuing Agency**	**Person Issued To**	**Permit Number**	**Brief Description of Violation**	**Abatement Action**	**Appeal Y or N**
5/13/2004	143419	PADEP		3743701	90.124		N
7/29/2004	165278	PADEP		3743701	90.106		N
7/29/2004	165278	PADEP		3743701	90.152		N
7/29/2004	169136	PADEP		3743701	90.152		N
7/29/2004	165279	PADEP		3743701	89.68		N
7/29/2004	165279	PADEP		3743701	89.83		N
8/13/2004	169138	PADEP		3743701	90.124		N
9/7/2004	169139	PADEP		3743701	89.81		N
5/13/2004	143416	PADEP		3743701	86.13 CO		N
6/15/2004	145872	PADEP		3743701	89.52 CO		N
2/8/2005	182734	PADEP		3743701	90.124		N
8/5/2005	199322	PADEP		3743701	90.159		N

Name of Operation			Identifying number for operation				Federal or State Permit Number	MSHA ID Number
UMCO			74645				PA 63921301	3608375
Date Issued	**Violation Number**	**Name of Issuing Agency**	**Person Issued To**	**Permit Number**	**Brief Description of Violation**	**Status (Abated, Term. etc.)**	**Abatement Action**	**Appeal Y or N**
9/1/2004	426787	DMRM		63921301	86.13	No resolution		N
9/3/2004	426786	DMRM		63921301	89.142a(b)	No resolution		N
9/20/2004	427936	DMRM		63921301	89.142a(b)	No resolution		N
1/4/2005	445603	Air Quality		63921301	25.127.25	ADM. Close Out		N
1/13/2005	445603	Air Quality		63921301	25.127.25	ADM Close Out		N
3/18/2005	445603	Air Quality		63921301	25.127.25	ADM Close Out		N
6/10/2005	466153	DEP		63921301	25.89.21	No resolution		N
7/15/2005	448412	DEP		63921301	25.89.68	Abated		N
7/15/2005	448413	DEP		63921301	25.89.83(a)	Abated		N
10/10/2006	499479	PADEP		63921301	89.142a(f)	No resolution		Y

Name of Operation			Identifying number for operation				Federal or State Permit Number	MSHA ID Number
Maple Creek			4244				63723707	36-00970
Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N
5/7/2004	394440	MCM		63841302	89.142A.F.1	Abated		N
5/12/2004	394880	MCM		63841302	89.142A.F.1	No resolution		N
5/13/2004	395344	MCM		63841302	89.142A.F.1	No resolution		N
5/13/2004	395345	MCM		63841302	89.142A.F.1V	No resolution		N
5/13/2004	395346	MCM		63841302	89.142A.E	Abated		N
5/7/2004	394440	MCM		63841302	89.142A.F.1	Abated		N
7/7/2004	401714	MCM		63841302	89.142A.F.1	No resolution		N
7/30/2004	421806	MCM		63841302	SMCRA.18.6	Abated		N
8/26/2004	425804	MCM		63841302	89.142A.F.1	No resolution		N
8/13/2004	426148	MCM		63723707	86.13	Abated		N
9/8/2004	427302	MCM		63723707	90.102	Abated		N
9/10/2004	427564	MCM		63723707	90.102	Abated		N
9/13/2004	427565	MCM		63723707	90.102	Abated		N
9/14/2004	427566	MCM		63723707	90.102	Abated		N
9/14/2004	427567	MCM		63723707	90.112	Abated		N
10/19/2004	432068	MCM		63723707	90.102	Abated		N
7/29/2005	469866	DEP		63723707	89.142a(b)(1)(iii)	No Resolution		N
12/1/2005	478486	PADEP		63841302	89.145a(b)	No Resolution		N
12/1/2005	478487	PADEP		63841302	89.145a(f)(1)(v)	No Resolution		N
12/1/2005	478488	PADEP		63841302	89.145a(b)	No Resolution		N
1/9/2006	480660	PADEP		63841302	1396.18(f)	Abated		N
6/12/2006	491619	PADEP		6381302	89.142a(e)	No Resolution		Y

Name of Operation	Identifying number for operation	Federal or State Permit Number	MSHA ID Number
PENNAMERICAN COAL LP	93081	32951301	36-00970

Kim Betcher

Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N

Name of Operation	Identifying number for operation	Federal or State Permit Number	MSHA ID Number
Ohio American Coal, Inc.	N/A	N/A	3304550/3304569

Kim Betcher

Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N
8/9/2006	21861	ODNR	OAEI	D-2180	outside of perrmit bndry	Abadted	IBR	N
3/1/2007	13101	ODNR	OAEI	D-2291	mining without a permit	Abadted	Permit issued	N

Name of Operation	Identifying number for operation	Federal or State Permit Number	MSHA ID Number
Energy Resources, Inc.	470	License # 1465	360 269 5

Charlie Shestak

Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N
5/11/2004	143258	PaDEP	ERI	24010101	87.147	Abated	Corrected	N
8/26/2004	167665	PaDEP	ERI	24010101	87.140	Abated	Corrected	N
8/30/2004	168590	PaDEP	ERI	24970102	87.147	Abated	Corrected	N
7/6/2004	147120	PaDEP	ERI	33901602	89.52	Abated	Corrected	N
7/31/2006	211989	PaDEP	ERI	17841607	86.152	Abated	Corrected	N
4/11/2006	486936	PaDEP	ERI	17930120	87.157	Abated	Corrected	N

Name of Operation	Identifying number for operation	Federal or State Permit Number	MSHA ID Number
TDK Coal Sales, Inc.	27182	17910124	3608867

Charlie Shestak

Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N
5/13/2004	143257	PaDEP	TDK	24970104	87.147	Abated	Waved	N
6/1/2004	144659	PaDEP	TDK	03940101	87.148	Abated	Corrected	N
9/15/2004	169382	PaDEP	TDK	03940102	87.106	Abated	Corrected	N
9/20/2004	169388	PaDEP	TDK	24970104	87.14	Abated	Corrected	N
10/7/2004	170575	PaDEP	TDK	24970104	87.106	Abated	Corrected	N
4/11/2006	486945	PaDEP	TDK	17900143	87.157	Abated	Corrected	N

Name of Operation	Identifying number for operation	Federal or State Permit Number	MSHA ID Number
Belmont Coal Company		D-0241/D-1020	33-04397/33-03048

David Bartsch

Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N
2/24/2004	24541	DMR	Mine	D-0241	Gullies exis in regraded	Terminated	regraded	N

Name of Operation	Identifying number for operation	Federal or State Permit Number	MSHA ID Number
The Ohio Valley Coal Co.	Powhatan No. 6 Mine	State – D-0360	33-01159

David Bartsch

Date Issued	Violation Number	Name of Issuing Agency	Person Issued To	Permit Number	Brief Description of Violation	Status (Abated, Term. etc.)	Abatement Action	Appeal Y or N
8/2/2004	19662	DMRM	Mine	D-0360	Failure to maintain sediment control	Terminated	Cleaned Ditch	N
5/23/2006	19656	DMRM	Mine	D-0360	Failure to maintain the perimeter of diversion ditch	Terminated	Cleaned Ditch	N
11/30/2006	28473	DMRM	Mine	D-0360	Undirected Drainage	Terminated	Cleaned Ditch	N
11/30/2006	28484	DMRM	Mine	D-0360	Coal Blocking Diversion Ditch	Terminated	Cleaned Ditch	N

Name of Operation			Identifying number for operation				Federal or State Permit Number	MSHA ID Number
American Energy Corp							D-0425	33-01070
Date Issued	**Violation Number**	**Name of Issuing Agency**	**Person Issued To**	**Permit Number**	**Brief Description of Violation**	**Status (Abated, Term. etc.)**	**Abatement Action**	**Appeal Y or N**
1/25/2005	21807	ODNR		D-0425	subsided residnet ran out of water	Terminated	filled tank with water	N
4/27/2005	19696	ODNR		D-0425	Coal located outside stockpile area	Terminated	cleaned coal	N
4/29/2005	19695	ODNR		D-0425	Maintenance on pond 018	Terminated	cleaned out pond	N
4/27/2005	19697	ODNR		D-0425	drainage from property not entering sumps	Terminated	construct sumps	N
10/3/2005	21871	ODNR		D-0425	Failure to sub specific repairs (landowner)	Active		N
6/15/2006	21860	ODNR		D-1159	Segregate Prim Farmland soils	Active	Waiting on ODNR, All information submitted	N
Aug-05	CO-1726	ODNR		D-0425	Uncontroled discharge (Slurry)	Avtive	Will submit revised Plan Mid Month	N

Name of Operation			Identifying number for operation				Federal or State Permit Number	MSHA ID Number
The American Coal Co.			Galatia Mine & Millennium Portal				IDNR Mining Pemrit #2 and #352	11-02752
Date Issued	**Violation Number**	**Name of Issuing Agency**	**Person Issued To**	**Permit Number**	**Brief Description of Violation**	**Status (Abated, Term. etc.)**	**Abatement Action**	**Appeal Y or N**
9/27/2004	37-1-04	IDNR	DeNeal	Permit #2	Failure to submit groundwater report on schedule	Terminited		N
4/13/2005	37-01-05	IDNR	DeNeal	Permit #2	Failure to submit u/g mining maps	Terminited		N
5/12/2005	37-02-05	IDNR	DeNeal	Shadow Area 9	failure to complete subsidence mitigation in	Modified		N
					contemporaneous manner.			
6/1/2005	37-03-05	IDNR	DeNeal	352	broken waterline-fialure to prevent minepumpage from passing through sediment pond before going offsite	Terminated		N

The following companies either did not have any violations in the last three years or do not have permits.

Oklahoma Coal Company

KenAmerican Resources, Inc.

Onieda Coal, Inc.

MonValley Transportation Center, Inc.

Mill Creek Mining Co.

Pinski Corp

American Compliance Coal Inc.

Coal Resources Inc.

PA Transloading, Inc.

West Virginia Resources Inc.

WildCat Loadout

American Coal Sales Co.

Hocking Valley Resources Co..

APPENDIX B
PART C

INSURANCE

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 06/06/2007

PRODUCER (724)349-1300 FAX (724)349-1446
Reschini Agency Inc
922 Philadelphia Street
P.O. Box 449
Indiana, PA 15701

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED Andalex Resources, Inc.
A Subsidiary of UtahAmerican Energy, Inc.
6750 N. Airport Road
Price, UT 84501

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Federal Insurance Company	20281
INSURER B: Lexington/National Union Fire Ins. Co	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A		GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR [X] Includes XCU GEN'L AGGREGATE LIMIT APPLIES PER: [X] POLICY [ ] PRO-JECT [ ] LOC	37104410	06/01/2007	06/01/2008	EACH OCCURRENCE	$ 1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurence)	$ 1,000,000
						MED EXP (Any one person)	$ 10,000
						PERSONAL & ADV INJURY	$ 1,000,000
						GENERAL AGGREGATE	$ 3,000,000
						PRODUCTS - COMP/OP AGG	$ 2,000,000
		AUTOMOBILE LIABILITY [ ] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident)	$
						BODILY INJURY (Per person)	$
						BODILY INJURY (Per accident)	$
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT	$
						OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
B		EXCESS/UMBRELLA LIABILITY [X] OCCUR [ ] CLAIMS MADE [ ] DEDUCTIBLE [ ] RETENTION $	3008743/ BE7250668	06/01/2007	06/01/2008	EACH OCCURRENCE	$ 25,000,000
						AGGREGATE	$ 25,000,000
							$
							$
							$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				[ ] WC STATU-TORY LIMITS [ ] OTH-ER	
						E.L. EACH ACCIDENT	$
						E.L. DISEASE - EA EMPLOYEE	$
						E.L. DISEASE - POLICY LIMIT	$
		OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Wildcat Loadout Act 007/033 - Cancellation Clause revised as follows: Should any of the above described policies be changed and/or cancelled before the expiration date thereof, the issuing company will mail (certified) 45 days written notice to the certificate holder named to the left.

CERTIFICATE HOLDER

State of Utah Dept of Natural Resources
Division of Oil, Gas & Mining/STE1210
Attn: Pamela Grubaugh-Littig/Wayne Hedberg
1594 W N. Temple, Box 145801
Salt Lake City, UT 84114-5801

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE
Karen Williams/KAREN Karen Williams

©ACORD CORPORATION 1988

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

State of Utah

Department of Natural Resources

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas & Mining

MARY ANN WRIGHT
Acting Division Director

November 17, 2006

RECEIVED
NOV 29 2006
OGM PRICE FIELD OFFICE

Mike Glasson, Environmental Coordinator
Andalex Resources Inc.
P.O. Box 902
Price, Utah 84501

Subject: Bond Replacement Approved, Andalex Resources, Inc, Tower Division, Wildcat Loadout, C/007/0033, Outgoing File

Dear Mr. Glasson:

The Division has accepted Bond #ISM 2290 posted by Rockwood Casualty Insurance Company in the amount of $651,000 for the Wildcat Loadout Facility, effective November 16, 2006. This bond replaces Irrevocable Letter of Credit issued by the PNC Bank (#S262710PGH) in the amount of $651,000.

If you have any questions, please call me at (801) 538-5268.

Sincerely,

Pamela Grubaugh-Littig
Permit Supervisor

an
cc: Price Field Office
O:\007033.WCL\FINAL\pglacceptablebondreplacement.doc

1594 West North Temple, Suite 1210, PO Box 145801, Salt Lake City, UT 84114-5801
telephone (801) 538-5340 • facsimile (801) 359-3940 • TTY (801) 538-7458 • *www.ogm.utah.gov*

Fireproof
1/007/0033

EXHIBIT "B"

Bonding Agreement
Surety Bond

(Federal Coal)

Exhibit "B"
Federal Surety Bond
Federal

Surety Bond Number ISM-2290
Mine Name/Number Wildcat Loadout Facility C/007/0033

The terms for release of this **BOND** are as written and agreed to by the **DIVISION** and the **PERMITTEE/PRINCIPAL** in the **RECLAMATION AGREEMENT**, incorporated by reference herein, to which this **SURETY AGREEMENT** has been attached as Exhibit "B".

In the event the Utah Cooperative Agreement is terminated, this **SURETY BOND** shall be payable only to the OSM to the extent that lands covered by the Federal Lands Program are involved and otherwise to the **DIVISION**.

IN WITNESS WHEREOF, the **PERMITTEE/PRINCIPAL** has hereunto set its signature and seal this 26th day of October, 2006.

Andalex Resources, Inc.
PERMITTEE/PRINCIPAL

By: Douglas H Smith

Title: **Douglas H. Smith, President**

IN WITNESS WHEREOF, the **SURETY** has hereunto set its signature and seal this 20th day of October, 20 06

Rockwood Casualty Insurance Company
SURETY

By: John P. Yediny

Title: President & Atty-in-Fact

SURETY BONDING AGREEMENT ACCEPTED BY THE STATE OF UTAH:

John R. Baza
Director
Division of Oil, Gas and Mining

NOTE: An **Affidavit of Qualification** must be completed and attached to this form for each authorized agent\or officer. Where one signs by virtue of Power of Attorney for a company, such Power of Attorney must be filed with the Agreement. If the **PERMITTEE** is a corporation, the Agreement shall be executed by its duly authorized officer.

Exhibit "A"
Legal Description
Federal
Bond Number ISM-2290

EXHIBIT "A"

Pursuant to R645-301- 820.110, the surety bond covers an identified increment of land within the permit area upon which the operator will initiate and conduct coal mining and reclamation operations during the initial term of the permit. This area is identified as:

Map(s) showing the BONDED AREA within the approved PERMIT AREA :

Wildcat Loadout Surface Facilities Plate 1 map attached

Legal description of BONDED AREA:

This permit area is located within B.L.M. Right-of-Way U-48027 on the "Standardville" U.S. Geological survey 7.5 minute quadrangle map, and is further described as follows:

Salt Lake Base and Meridian, Utah Township 13 South, Range 9 East, Section 33, NW¼SE½, N1/2 SW¼ SE¼, E½E½NE¼SW¼, E½NE¼SE¼SW¼, NE¼SE¼SE¼ SW¼, NW¼SW¼SW¼SE¼, E½SE¼SW¼NE¼, and portions of N½NW¼NE ¼SE¼, NE¼SE¼NE¼, SW¼SW¼NE¼, NW¼SE¼SW¼NE¼, W½NE, ¼SW¼, W½E½NE¼SW¼, W½E½SE¼SW¼.

In addition, there is a parcel of land 500 feet by 500 feet square whose southeast corner is located 990 feet east of the center of section 33.

The above described area shall be modified as necessary to correspond to an increase in the area disturbed as a result of an expansion of coal mining and reclamation operations. The described area may also be decreased as a result of partial reclamation.

IN WITNESS WHEREOF the **SURETY** has hereunto set its signature and seal this

20th day of October, 20 06.

Rockwood Casualty Insurance Company
SURETY

By: John P. Yediny

President & Atty-in-Fact
Title:

AFFIDAVITS

OF

QUALIFICATION

ISM-2290

ROCKWOOD CASUALTY INSURANCE COMPANY
654 Main Street
Rockwood, PA 15557

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the ROCKWOOD CASUALTY INSURANCE COMPANY, a Corporation duly organized and existing under the laws of the Commonwealth of Pennsylvania and having its principal office in the Borough of Rockwood, PA does hereby nominate, constitute and appoint:

John P. Yediny

its true and lawful agent and attorney-in-fact, to make, execute, seal and deliver for and on its behalf as surety, and as its act and deed any and all bonds, contracts, agreements of indemnity and other undertakings in suretyship (NOT INCLUDING bonds without a fixed penalty or financial guarantee) provided, however, that the penal sum of any one such instrument executed hereunder shall not exceed the sum of:

Six hundred fifty-one thousand and 00/100----------($651,000.00)

This Power of Attorney is granted and is signed and sealed under and by the authority of the following Resolution adopted by the Board of Directors of ROCKWOOD CASUALTY INSURANCE COMPANY:

"RESOLVED, That the President, Senior Vice President, Vice President, Assistant Vice President, Secretary, Treasurer and each of them hereby is authorized to execute powers of attorney, and such authority can be executed by use of facsimile signature, which may be attested or acknowledged by any officer or attorney, of the Company, qualifying the attorney or attorneys named in the given power of attorney, to execute in behalf of, and acknowledge as the act and deed of the ROCKWOOD CASUALTY INSURANCE COMPANY, all bond undertakings and contracts of suretyship, and to affix the corporate seal thereto."

IN WITNESS WHEREOF, ROCKWOOD CASUALTY INSURANCE COMPANY has caused its official seal to be hereunto affixed and these presents to be signed by its authorized officer the 20th day of October, 2006.

ROCKWOOD CASUALTY INSURANCE COMPANY

By _____
Philip S. Kift, Vice President

STATE OF PENNSYLVANIA
COUNTY OF SOMERSET SS:

On this 20th day of October A.D. 2006, before me, a Notary Public of the Commonwealth of Pennsylvania, in and for the County of Somerset, duly commissioned and qualified, came THE ABOVE OFFICER OF THE COMPANY, to me personally known to be the individual and officer described in, and who executed the preceding instrument, and he acknowledged the execution of same, and being by me duly sworn, deposed and said that he is the officer of the said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority and direction of the said corporation, and that Resolution adopted by the Board of Directors of said Company, referred to in the preceding instrument is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand, and affixed my Official Seal at the Borough of Rockwood, the day and year first above written.

Notarial Seal
Kelly J. Geary, Notary Public
Rockwood Boro, Somerset County
My Commission Expires Mar. 6, 2007
Member, Pennsylvania Association of Notaries

_____
(Notary Public)

I, the undersigned Officer of the ROCKWOOD CASUALTY INSURANCE COMPANY, a Pennsylvania Corporation of Rockwood, PA, do hereby certify that the original POWER OF ATTORNEY of which the foregoing is a full, true and correct copy is still in full force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand, and affixed the Seal of said Company, on the 20th day of October, 2006.

_____
David W. Hay, Vice President

Exhibit "D"
Stipulation to Revise
Reclamation Agreement
Federal

Permit Number: PRO 007/033
Effective Date: 5/5/89
Bond Number: ISM 2290

COAL
STIPULATION TO REVISE RECLAMATION AGREEMENT
--ooOOoo--

This **STIPULATION TO REVISE RECLAMATION AGREEMENT** entered into by and between the **PERMITTEE** and **DIVISION** incorporates the following revisions or changes to the **RECLAMATION AGREEMENT**: (Identify and Describe Revisions below)

In accordance with this **STIPULATION TO REVISE RECLAMATION AGREEMENT**, the following Exhibits have been replaced by the **PERMITTEE** and are approved by the **DIVISION.**

_____ Replace the Reclamation agreement in its entirety.

_____ Replace Exhibit "A"- permit area.

_____ Replace Exhibit "B"- bonding agreement

_____ Replace Exhibit "C"- liability insurance

The bonding amount is revised from $_____ to $_____.

The bonding type is changed from ILOC to Bond.

The surface disturbance is revised from _____ acre to _____ acres.

The expiration date is revised from _____ to _____.

The liability insurance carrier is changed from _____ to _____.

The amount of insurance coverage for bodily injury and property damage is changed from

$_____ to $_____.

Bond Number ISM 2290

AFFIDAVIT OF QUALIFICATION
PERMITTEE
--ooOOoo--

I, Douglas H. Smith, being first duly sworn under oath, deposes and says that he/~~she~~ is the (officer ~~or agent~~) President of Andalex Resources, Inc.; and that he/~~she~~ is duly authorized to execute and deliver the foregoing obligations; and that said PERMITTEE is authorized to execute the same and has complied in all respects with the laws of Utah in reference to commitments, undertakings and obligations herein.

Douglas H. Smith
(Signed)
Name - Position
Douglas H. Smith
President

Attest: Merlene Mecham
Secretary of the Corporation

STATE OF Utah)
) ss:
COUNTY OF Carbon)
Subscribed and sworn to before me this 14 day of November, 2006

Rochelle Wood
Notary Public

My Commission Expires:
06-16-, 2006

ROCHELLE WOOD
NOTARY PUBLIC-STATE OF UTAH
90 NORTH 400 EAST PO BOX 544
WELLINGTON, UT 84542
COMM. EXP. 06-16-2010

ANDALEX
RESOURCES, INC.

P.O. BOX 902
PRICE, UTAH 84501
PHONE (435) 637-5385
FAX (435) 637-8860

October 27, 2006

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

Attn: Pamela Grubaugh-Littig
Permit Supervisor

Fireproof
C/007/0033

Re: Wildcat Loadout, C/007/0033, Reclamation Bond

Dear Ms. Littig,

Enclosed please find one original of the new Wildcat Loadout Reclamation Bond. Please have the UDOGM Director sign the bond and return a copy to me. Also, at this time, we respectfully request that we be released from the $651,000 Letter of Credit, currently on file with the Division for the reclamation of C007/033.

Thank you very much.

Sincerely,

Michael W. Glasson
Resident Agent

RECEIVED
OCT 3 0 2006
DIV. OF OIL, GAS & MINING

Exhibit "D"
Stipulation to Revise
Reclamation Agreement
Federal

Permit Number: PRO 007/033
Effective Date: 5/5/89
Bond Number: ISM 2290

COAL
STIPULATION TO REVISE RECLAMATION AGREEMENT
--ooOOoo--

This **STIPULATION TO REVISE RECLAMATION AGREEMENT** entered into by and between the **PERMITTEE** and **DIVISION** incorporates the following revisions or changes to the **RECLAMATION AGREEMENT**: (Identify and Describe Revisions below)

In accordance with this **STIPULATION TO REVISE RECLAMATION AGREEMENT**, the following Exhibits have been replaced by the **PERMITTEE** and are approved by the **DIVISION.**

_____ Replace the Reclamation agreement in its entirety.

_____ Replace Exhibit "A"- permit area.

_____ Replace Exhibit "B"- bonding agreement

_____ Replace Exhibit "C"- liability insurance

The bonding amount is revised from $_____ to $_____.

The bonding type is changed from ILC[illegible] Bond

The surface disturbance is revised from

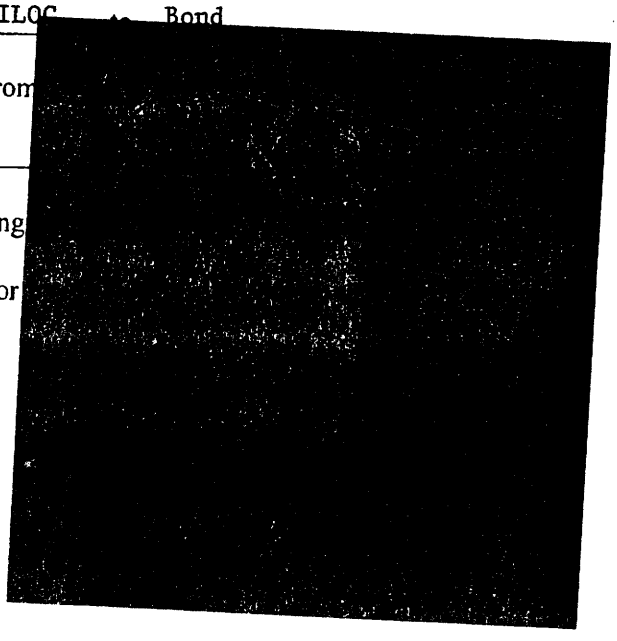
The expiration date is revised from

The liability insurance carrier is chang

The amount of insurance coverage for

from

$_____ to $_____.



BOND INFORMATION

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

PNC Bank, National Association
Trade Service Operations
3rd Floor
500 First Avenue
Pittsburgh, PA 15219
Mail Stop: P7-PFSC-03-T

Telex: 866533
Swift: PNCCUS33
Answerback: Firstbank Pgh
Telephone: 1-800-682-4689

PNCBANK

DATE: DECEMBER 9, 2003

BENEFICIARY:
STATE OF UTAH
DIVISION OF OIL, GAS & MINING
SEE COMPLETE NAME AND ADDRESS BELOW
SALT LAKE CITY UT 84114-5801

APPLICANT:
ANDALEX RESOURCES INC.
P.O. BOX 902
PRICE UT 84501

OUR REFERENCE: S262710PGH

IRREVOCABLE STANDBY LETTER OF CREDIT

STANDBY LETTER OF CREDIT NO.: S262710PGH

CURRENCY/AMOUNT: USD 651,000.00
NOT EXCEEDING USD SIX HUNDRED FIFTY ONE THOUSAND AND 00/100'S

ISSUE DATE: DECEMBER 9, 2003
EXPIRY DATE: DECEMBER 1, 2004
EXPIRY PLACE: PITTSBURGH, PA

BENEFICIARY'S COMPLETE NAME AND ADDRESS:
STATE OF UTAH
DIVISION OF OIL, GAS & MINING
ATTN: PAMELA GRUBAUGH-LITTIG
1504 WEST NORTH TEMPLE, SUITE 1210
PO BOX 145801
SALT LAKE CITY, UT 84114-5801

REF.: PERMIT NO. C/007/019

ON BEHALF OF ANDALEX RESOURCES, INC. (THE "PERMITTEE"), WE HEREBY ESTABLISH OUR IRREVOCABLE LETTER OF CREDIT IN YOUR FAVOR, PAYABLE IN PART OR FULL TO THE STATE OF UTAH, DIVISION OF OIL, GAS AND MINING, AVAILABLE BY YOUR DRAFT(S) AT SIGHT DRAWN ON PNC BANK, NATIONAL ASSOCIATION IN AN AMOUNT NCT TO EXCEED $651,000.00, ACCOMPANIED BY A STATEMENT PURPORTEDLY SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE

INCORPORATED
NOV 17 2003
Div. of Oil, Gas & Mining

PNC Bank, National Association
Trade Service Operations
3rd Floor
500 First Avenue
Pittsburgh, PA 15219
Mail Stop: P7-PFSC-03-T

Telex: 866533
Swift: PNCCUS33
Answerback: Firstbank Pgh
Telephone: 1-800-682-4689

PNCBANK

THIS IS AN INTEGRAL PART OF L/C NO. S262710PGH PAGE... 2

DIVISION OF OIL, GAS AND MINING ("DOGM") CERTIFYING THAT THE DRAWING IS PURSUANT TO R645-301-880-900, BECAUSE OF ONE OR MORE VIOLATIONS OF THE SURFACE MINING CONTROL AND RECLAMATION ACT, THE REGULATORY PROGRAM, THE PERMIT AND THE RECLAMATION PLAN.

THIS LETTER OF CREDIT WILL AUTOMATICALLY BE EXTENDED FOR PERIODS OF ONE YEAR FROM ANY SCHEDULED EXPIRATION DATE (AS ORIGINALLY SCHEDULED OR AUTOMATICALLY EXTENDED) UNLESS NINETY (90) DAYS PRIOR TO SUCH DATE WE NOTIFY YOU IN WRITING BY CERTIFIED MAIL, RETURN RECEIPT REQUESTED, THAT WE ELECT NOT TO EXTEND THIS LETTER OF CREDIT FOR SUCH ADDITIONAL PERIOD.

UPON RECEIPT BY YOU OF SUCH NOTICE, YOU MAY DRAW ON US AT SIGHT FOR THE AMOUNT OF THIS LETTER OF CREDIT BEGINNING 30 DAYS OR LESS PRIOR TO THE THEN APPLICABLE EXPIRATION DATE, BY YOUR DRAFT AS DESCRIBED ABOVE CCOMPANIED BY A STATEMENT SIGNED BY DOGM'S BOND APPROVING OFFICER ERTIFYING ~~THAT THE AMOUNT OF THE DRAWING~~ REPRESENTS FUNDS DUE DOGM BECAUSE THE PERMITTEE HAS FAILED TO ~~REPLACE THIS~~ LETTER OF CREDIT BY OTHER SUITABLE BOND PURSUANT TO R645-301-860.222 AND R645-301-870.

WE CERTIFY THAT THE AMOUNT OF THE CREDIT HEREIN ESTABLISHED WILL NOT BE REDUCED FOR ANY REASON DURING THE PERIOD OF THIS INSTRUMENT WITHOUT THE WRITTEN CONSENT OF DOGM. WE WILL GIVE PROMPT NOTICE TO THE PERMITTEE AND TO DOGM'S BOND APPROVING OFFICER OF ANY NOTICE RECEIVED OR ACTION FIELD ALLEGING THE INSOLVENCY OR BANKRUPTCY OF THE BANK, OR ALLEGING ANY VIOLATIONS OF REGULATORY REQUIREMENTS WHICH COULD RESULT IN SUSPENSION OR REVOCATION OF THE BANKS CHARTER OR LICENSE TO DO BUSINESS.

IN THE EVENT THE BANK BECOMES UNABLE TO FULFILL OUR OBLIGATIONS UNDER THIS LETTER OF CREDIT FOR ANY REASON, NOTICE SHALL BE GIVEN IMMEDIATELY TO THE PERMITTEE AND TO DOGM'S BOND APPROVING OFFICER.

THIS LETTER OF CREDIT IS SUBJECT TO THE UNIFORM CUSTOMS & PRACTICE FOR DOCUMENTARY CREDITS (1993 REVISION) INTERNATIONAL CHAMBER OF COMMERCE, PUBLICATION NO. 500.

IN WITNESS ~~WHEREOF, THE BANK~~ HAS HEREUNTO SET ITS SIGNATURE THIS 9TH DAY OF DECEMBER, 2003.

UTHORIZED SIGNATURE

INCORPORATED

FORM 116850-1200

PNC Bank, National Association
Trade Service Operations
3rd Floor
500 First Avenue
Pittsburgh, PA 15219
Mail Stop: P7-PFSC-03-T

Telex: 866533
Swift: PNCCUS33
Answerback: Firstbank Pgh
Telephone: 1-800-682-4689

PNCBANK

THIS IS AN INTEGRAL PART OF L/C NO. S262710PGH PAGE... 3

PNC BANK, NATIONAL ASSOCIATION
TRADE SERVICES DEPARTMENT

THIS IS OPERATIVE DOCUMENT.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

EXHIBIT "D"

Stipulation to Revise Reclamation Agreement (Federal)

INCORPORATED
JAN 17 2005
Div. of Oil, Gas & Mining

Exhibit "D"
Stipulation to Revise
Reclamation Agreement
Federal

Permit Number: C007/033
Effective Date: May 5, 1999
Bond Number: 400776222

COAL
STIPULATION TO REVISE RECLAMATION AGREEMENT
--ooOOoo--

This **STIPULATION TO REVISE RECLAMATION AGREEMENT** entered into by and between the **PERMITTEE** and **DIVISION** incorporates the following revisions or changes to the **RECLAMATION AGREEMENT**: (Identify and Describe Revisions below)

The Reclamation Bond has been changed from a Surety to an Irrevocable Letter of Credit.

In accordance with this **STIPULATION TO REVISE RECLAMATION AGREEMENT**, the following Exhibits have been replaced by the **PERMITTEE** and are approved by the **DIVISION**.

N/A Replace the Reclamation agreement in its entirety.

N/A Replace Exhibit "A"- permit area.

N/A Replace Exhibit "B"- bonding agreement

N/A Replace Exhibit "C"- liability insurance

The bonding amount is revised from $ 813,795.00 to $ 651,000.00

The bonding type is changed from Surety to Letter of Credit.

The surface disturbance is revised from N/A acre to N/A acres.

The expiration date is revised from 11/30/03 to 12/01/04.

The liability insurance carrier is changed from N/A to N/A.

The amount of insurance coverage for bodily injury and property damage is changed from

$ N/A to $ N/A.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

Exhibit "D"
Stipulation to Revise
Reclamation Agreement
Federal

ANDALEX

IN WITNESS WHEREOF, Resources, Inc. the **PERMITTEE** has hereunto set its signature and seal this 2nd day of February, 2004.

PERMITTEE

By: John Bradshaw

Title: V.P. Finance

ACCEPTED BY THE STATE OF UTAH this ___ day of _____, 20___.

Director,
Division of Oil, Gas and Mining

NOTE: An **Affidavit of Qualification** must be completed and attached to this form for each authorized agent or officer. Where on signs by virtue of Power or Attorney of a company, such Power of Attorney must be filed with this Agreement. If the **PERMITTEE** is a corporation, the Agreement shall be executed by its duly authorized officer.

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

OLENE S. WALKER
Governor

GAYLE F. McKEACHNIE
Lieutenant Governor

State of Utah

Department of
Natural Resources

Division of
Oil, Gas & Mining

ROBERT L. MORGAN
Executive Director

LOWELL P. BRAXTON
Division Director

February 2, 2004

CERTIFIED MAIL
7099 3400 0016 8895 5927

Susan Bingham
Underwriters Safety & Claims
P.O. Box 23790
Louisville, Kentucky 40223

Re: Release of Surety Bond #400776222 – Continental Casualty Company, Andalex Resources, Inc., Wildcat Loadout, C/007/0033, Outgoing File

Dear Ms. Bingham:

Enclosed please find original bond #400776222 issued by Continental Casualty Company in the amount of $813,795. Irrevocable Letter of Credit #S262710PGH issued by PNC in the amount of $651,000 has been accepted as the replacement bond to guarantee reclamation at the Wildcat Loadout, effective December 9, 2003. This bond replacement does not constitute bond release.

If you have any questions, please call me at (801) 538-5268.

Sincerely,

Pamela Grubaugh-Littig
Permit Supervisor

an
Enclosure
cc: Mike Glasson
Price Field Office
O:\007033.WCL\FINAL\pglrelcasofbond.doc

JAN 17 2004
Div. of Oil, Gas & Mining

APPENDIX B
PART D

BOND INFORMATION

Bonding Calculations

Direct Costs		
Subtotal Demolition and Removal	$144,183.00	
Subtotal Backfilling and Grading	$173,693.00	
Subtotal Revegetation	$162,323.00	
Direct Costs	$480,199.00	
Indirect Costs		
Mob/Demob	$48,020.00	10.0%
Contingency	$24,010.00	5.0%
Engineering Redesign	$12,005.00	2.5%
Main Office Expense	$32,654.00	6.8%
Project Mainagement Fee	$12,005.00	2.5%
Subtotal Indirect Costs	$128,694.00	26.8%
Total Cost	$608,893.00	
Escalation factor		0.0444
Number of years		1
Escalation	$27,035.00	
Reclamation Cost Escalated	$635,928.00	
Bond Amount (rounded to nearest $1,000) 2006 dollars	$636,000.00	
Bond Posted 2006 dollars	$651,000.00	
Difference Between Cost Estimate and Bond	$15,000.00	
Percent Difference	2.36%	

RECORPORATED
MAY 17 2005
Div of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Loading Bin 01																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	15	15	12								FT		2700	CF	540
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	30	18	1								FT		20	CY	79
	Concrete's Vol. Demolished																1.3	26	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													26	CY	36
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	02315 490 0320	3.44	/CY													26	CY	89
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													26	CY	198
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Scales 02																			
	Structure's Demolition Cost	Mixed Materials Bld. Large	02220 110 0100	0.21	/CF	14	60	8								FT		6720	CF	1411
	Structure's Vol. Demolished																0.35	87	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	City Services	City Service Price	4	/CY													87	CY	348
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1759
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	14	60	8								FT		6720	CF	1344
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1344
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	14	70	0.5								FT		18	CY	71
	Concrete's Vol. Demolished																1.3	23	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													23	CY	32
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													23	CY	79
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													23	CY	175
	Subtotal																			357
	Asphalt's Demolition Cost																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	10	12	0.25								FT		1	CY	4
	Concrete's Vol. Demolished																1.3	1	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													1	CY	1
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													1	CY	3
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													1	CY	8
	Subtotal																			16
	Road's Demolition Cost																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	340	20	0.25								FT		63	CY	250
	Concrete's Vol. Demolished																1.3	82	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													82	CY	114
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													82	CY	282
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													82	CY	623
	Subtotal																			1269
	Total																			4745

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Substation 03																			
	Structure's Demolition Cost	Mechanical equipment heavy	15055 300 3600	805	/ton								3			ton		3	ton	2415
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			2415
	Equipment 's Disposal Cost																			
	Dismantling Cost	Chain link remove 8'-10'	02220 220 1700	2.92	/LF	250										FT		250	FT	730
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			730
	Equipment 's Disposal Cost	Powerpole	Hiawatha	100	EA										13	Ea		13	EA	1300
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			1300
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	25	15	0.5										7	CY	28
	Concrete's Vol. Demolished																1.3	9	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													9	CY	13
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													9	CY	31
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													9	CY	68
	Subtotal																			140
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	25	15	0.5										7	CY	28
	Concrete's Vol. Demolished																1.3	9	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													9	CY	13
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													9	CY	31
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													9	CY	68
	Subtotal																			140
	Total																			4725

RECEIVED
APR 11 2003
Div. of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Truck Dump West 04																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	40	14	15								FT		8400	CF	1680
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1680
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY						50					CY		50	CY	199
	Concrete's Vol. Demolished																			
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY												1.3	65	CY	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	02315 490 0320	3.44	/CY													65	CY	90
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													65	CY	224
	Subtotal																	65	CY	494
																				1007
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			2687

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Crushing Plant West 05																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	20	15	10								FT		3000	CF	600
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			600
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	20	15	1								FT		11	CY	44
	Concrete's Vol. Demolished																1.3	14	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													14	CY	19
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	02315 490 0320	3.44	/CY													14	CY	48
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													14	CY	106
	Subtotal																			217
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			817

INCORPORATED MAY 17 2005 Div of Oil, Gas & Mining

RECEIVED
MAY 17 2005
Div. of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Radial Stacker West 06																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	150	8	8								FT		9600	CF	1920
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	150	8	1								FT		44	CY	175
	Concrete's Vol. Demolished																1.3	57	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													57	CY	79
	Transportation Cost	12 CY (18 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													57	CY	196
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													57	CY	433
	Subtotal																			883
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			2963

RECEIVED MAY 17 2006 Div. of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Reclaim Tunnel West 07																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	190	14	8												
	Structure's Vol. Demolished															FT		21280	CF	4256
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			4256
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	190	14	1								FT		99	CY	393
	Concrete's Vol. Demolished																1.3	129	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													129	CY	179
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													129	CY	444
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													129	CY	980
	Subtotal																			1996
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			6252

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Loadout Conveyor West 08																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	320	4	4								FT		5120	CF	1024
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1024
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1024

RECEIVED MAY 17 2005 Div. of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Control Building West 09																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	30	15	8								FT		3600	CF	720
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			0
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			0
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	40	20	0.5								FT		15	CY	60
	Concrete's Vol. Demolished																1.3	20	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													20	CY	28
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													20	CY	69
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													20	CY	152
	Subtotal																			309
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			0
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			0
	Total																			1029

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Truck Dump Reclaim 10																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	40	14	15								FT		8400	CF	1680
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1680
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY						75					CY		75	CY	298
	Concrete's Vol. Demolished																1.3	98	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													98	CY	136
	Transportation Cost	12 CY (18 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													98	CY	337
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													98	CY	745
	Subtotal																			1516
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			3196

RECEIVED
MAY 2 2005
Div. of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Conveyor T 11																			
	Structure's Demolition Cost	Steel Bld, Large	02220 110 0012	0.2	/CF	250	4	4												
	Structure's Vol. Demolished															FT		4000	CF	800
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			800
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	15	35	1												
	Concrete's Vol. Demolished															FT		19	CY	75
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY												1.3	25	CY	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													25	CY	35
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													25	CY	86
	Subtotal																	25	CY	190
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			186

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Crusher Screen Plant 12																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	44	20	15								FT		13200	CF	2640
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			2640
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	35	30	8								FT		8400	CF	1680
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1680
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	57	50	1								FT		106	CY	421
	Concrete's Vol. Demolished																1.3	138	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													138	CY	192
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													138	CY	475
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													138	CY	1049
	Subtotal																			2137
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			6457

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Lump Coal Belt 13																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	100	3	3												
	Structure's Vol. Demolished															FT		900	CF	180
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			180
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY															
	Concrete's Vol. Demolished										10					CY		10	CY	40
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY												1.3	13	CY	
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													13	CY	18
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													13	CY	45
	Subtotal																	13	CY	99
																				312
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			492

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Stoker Radial Stacker 14																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	100	10	10								FT		10000	CF	2000
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	60	8	1								FT		18	CY	71
	Concrete's Vol. Demolished																1.3	23	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													23	CY	32
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													23	CY	79
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													23	CY	175
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			257

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Conveyor Y 15																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	600	4	4										9600	CF	1920
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1920
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	35	15	1										19	CY	75
	Concrete's Vol. Demolished																1.3	25	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													25	CY	35
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	02315 490 0320	3.44	/CY													25	CY	86
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													25	CY	190
	Subtotal																			386
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			2306

Printed 6/[illegible]5 Filename DEMO073[illegible] Worksheet ConveyorY15 Page 1 of 1

RECEIVED
MAY 7 2003
Div of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Main Radial Stacker 16																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	280	15	15								FT		58500	CF	11700
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			11700
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	280	10	1								FT		104	CY	413
	Concrete's Vol. Demolished																1.3	135	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													135	CY	188
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													135	CY	464
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													135	CY	1026
	Subtotal																			2091
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			13791

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Loadout Reclaim 17																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	750	4	8								FT		24000	CF	4800
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			4800
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	750	14	1								FT		389	CY	1544
	Concrete's Vol. Demolished																1.3	506	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													506	CY	703
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	02315 490 0320	3.44	/CY													506	CY	1741
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													506	CY	3846
	Subtotal																			7834
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			12634

Printed 6/2[illegible] Filename DEMO0733200[illegible] Worksheet LoadoutReclaim17 Page 1 of 1

Div. of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Loadout Tower 18																			
	Structure's Demolition Cost	Steel Bld, Large	02220 110 0012	0.2	/CF	35	40	60								FT		84000	CF	16800
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			16800
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	12	8	1								FT		4	CY	16
	Concrete's Vol. Demolished																1.3	5	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													5	CY	7
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													5	CY	17
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													5	CY	38
	Subtotal																			78
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	12	18	1								FT		8	CY	32
	Concrete's Vol. Demolished																1.3	10	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													10	CY	14
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													10	CY	34
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													10	CY	76
	Subtotal																			156
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	40	60	1								FT		89	CY	353
	Concrete's Vol. Demolished																1.3	116	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													116	CY	161
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													116	CY	399
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													116	CY	882
	Subtotal																			1795
	Total																			18829

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Office 19																			
	Structure's Demolition Cost	Steel Bld, Large	02220 110 0012	0.2	/CF	40	30	8								FT		9600	CF	1920
	Structure's Vol. Demolished																0.35	124	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	City Services	City Service Price	4	/CY													124	CY	496
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			2416
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	66	30	0.5								FT		37	CY	147
	Concrete's Vol. Demolished																1.3	48	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													48	CY	67
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	02315 490 0320	3.44	/CY													48	CY	165
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													48	CY	365
	Subtotal																			744
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	70	35	0.5								FT		45	CY	179
	Concrete's Vol. Demolished																1.3	59	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													59	CY	82
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	02315 490 0320	3.44	/CY													59	CY	203
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													59	CY	448
	Subtotal																			912
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			4072

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Powerline 20																			
	Structure's Demolition Cost	Powerpole	Hiawatha	100	EA										25	EA		25	EA	2500
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			0

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Shop 21																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	40	45	20								FT		36000	CF	7200
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	45	45	1								FT		75	CY	298
	Concrete's Vol. Demolished																1.3	98	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													98	CY	136
	Transportation Cost	12 CY (18 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													98	CY	337
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													98	CY	745
	Subtotal																			1480
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			8760

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	GuardRails 22																			
	Structure's Demolition Cost	Guiderail remove	02220 240 0800	11.9	LF	1000										FT		1000	FT	11900
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			11900

RECEIVED
MAY 11 2005
Div. of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Culverts 23																			
	Excavate Culvert 12"	Excavation Bulk Bank 2 CY (322BL)	02315 424 0260	1.7	/CY	650	1	2								FT		48	CY	82
	Backfill Culvert 12"	Backfill Trench Mininal Haul 2 1/4 CY	02315 610 3080	1.53	/CY	650	1	2								FT		48	CY	73
	Excavate Culvert 15"	Excavation Bulk Bank 2 CY (322BL)	02315 424 0260	1.7	/CY	400	1.3	2.6								FT		50	CY	85
	Backfill Culvert 15"	Backfill Trench Mininal Haul 2 1/4 CY	02315 610 3080	1.53	/CY	400	1.3	2.6								FT		50	CY	77
	Excavate Culvert 18"	Excavation Bulk Bank 2 CY (322BL)	02315 424 0260	1.7	/CY	310	1.5	3								FT		52	CY	88
	Backfill Culvert 18"	Backfill Trench Mininal Haul 2 1/4 CY	02315 610 3080	1.53	/CY	310	1.5	3								FT		52	CY	80
	Excavate Culvert 24"	Excavation Bulk Bank 2 CY (322BL)	02315 424 0260	1.7	/CY	1440	2	4								FT		427	CY	726
	Backfill Culvert 24"	Backfill Trench Mininal Haul 2 1/4 CY	02315 610 3080	1.53	/CY	1440	2	4								FT		427	CY	653
	Excavate Culvert 36"	Excavation Bulk Bank 2 CY (322BL)	02315 424 0260	1.7	/CY	80	3	6								FT		53	CY	90
	Backfill Culvert 36"	Backfill Trench Mininal Haul 2 1/4 CY	02315 610 3080	1.53	/CY	80	3	6								FT		53	CY	81
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Miscellaneous 24																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Water Tank																			
	Equipment 's Disposal Cost	6000 gal. to 8000 gal. tank	02115 200 0120	845	Ea.						8000					GAL		1	EA	845
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs	6000 gal. to 8000 gal. tank	02115 200 1026	825	Ea.						8000					GAL		1	EA	825
	Disposal Costs																			
	Subtotal																			
	Water Tank																			
	Equipment 's Disposal Cost	6000 gal. to 8000 gal. tank	02115 200 0120	845	Ea.						6000					GAL		1	EA	845
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs	6000 gal. to 8000 gal. tank	02115 200 1026	825	Ea.						6000					GAL		1	EA	825
	Disposal Costs																			
	Subtotal																			
	Water Tank																			
	Equipment 's Disposal Cost	9000 gal to 12000 gal tank	02115 200 0130	1275	Ea.						10000					GAL		1	EA	1275
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs	9000 gal to 12000 gal tank	02115 200 1029	1100	Ea.						10000					GAL		1	EA	1100
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			

RECEIVED
JUL 07 2005
Div. of Oil, Gas & Mining

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Truck Dump New 25																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	40	14	15								FT		8400	CF	1680
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1680
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY						75					CY		75	CY	298
	Concrete's Vol. Demolished																1.3	98	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													98	CY	136
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	02315 490 0320	3.44	/CY													98	CY	337
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													98	CY	745
	Subtotal																			1516
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			3196

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Conveyor New 26																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	250	4	4								FT		4000	CF	800
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			0
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			0
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	15	15	1								FT		8	CY	32
	Concrete's Vol. Demolished																1.3	10	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													10	CY	14
	Transportation Cost	12 CY (18 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													10	CY	34
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													10	CY	76
	Subtotal																			156
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			0
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			0
	Total																			156

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Radial Stacker New 27																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	250	15	15								FT		56250	CF	11250
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY	260	10	1								FT		96	CY	381
	Concrete's Vol. Demolished																1.3	125	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													125	CY	174
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													125	CY	430
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													125	CY	950
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			

RECEIVED
MAY 17 2004
DIV. OF OIL, GAS & MINING

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Convevor R 28																			
	Structure's Demolition Cost	Steel Bld. Large	02220 110 0012	0.2	/CF	1250	7	4								FT		35000	CF	7000
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			7000
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	ConcreteDemo1	3.97	/CY						20					CY		20	CY	79
	Concrete's Vol. Demolished																1.3	26	CY	
	Loading Cost	Front end loader 3 CY	02315 424 1300	1.39	/CY													26	CY	36
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	02315 490 0320	3.44	/CY													26	CY	89
	Disposal Costs	On site disposal	02220 240 5550	7.6	/CY													26	CY	198
	Subtotal																			402
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			402

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Loading Bin 01																			942
	Scales 02																			4745
	Substation 03																			4726
	Truck Dump West 04																			2687
	Crushing Plant West 05																			817
	Radial Stacker West 06																			2803
	Reclaim Tunnel West 07																			6252
	Loadout Conveyor West 08																			1024
	Control Building West 09																			1029
	Truck Dump Reclaim 10																			3196
	Conveyor T 11																			1186
	Crusher Screen Plant 12																			6457
	Lump Coal Belt 13																			382
	Stoker Radial Stacker 14																			2357
	Conveyor Y 15																			2308
	Main Radial Stacker 16																			13791
	Loadout Reclaim 17																			12634
	Loadout Tower 18																			18829
	Office 19																			2416
	Powerline 20																			2500
	Shop 21																			8716
	GuardRails 22																			11900
	Culverts 23																			2035
	Miscellaneous 24																			5715
	Truck Dump New 25																			3196
	Conveyor New 26																			956
	Radial Stacker New 27																			13185
	Conveyor R 28																			7402
	Total																			144193

RECEIVED
MAY 17 2005
Div. of Oil, Gas & Mining

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Cleanup 01															
Wildcat Loadout Cleanup Coal Pile															
D9R Semi-U EROPS (9-54) (2H04)	17115	72.3	0.1	52	238.5	1	238.5	$/HR	1500	CY	187	CY/HR	8	HR	1908
988G EROPS (9-38) (3Q03)	9010	40.05	0.1	52	152.37	1	152.37	$/HR	1500	CY	187	CY/HR	8	HR	1219
CLAB					41.55	1	41.55	$/HR					16	HR	665
Foreman Average, Outside					57.3	1	57.3	$/HR					16	HR	917
5,000 gal H2O truck Diesel (20-17) (1Q04)	4725	28.05	0.1	42	102.39	1	102.39	$/HR					16	HR	1638
Pickup Truck Crew 4x4 1 ton (20-17) (2N04)	820	7.8	0.1	0	13.71	1	13.71	$/HR					16	HR	219
															6568

RECEIVED
MAY 17 2005
Div. of Oil, Gas & Mining

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Regrading 02 Wildcat Loadout Recontour/Regrade															
D9R Semi-U EROPS (9-54) (2H04)	17115	72.3	0.1	52	238.5	1	238.5	$/HR	38872	CY	187	CY/HR	207.9	HR	49584
627G EROPS (9-52) (2nd04)	16080	84.6	0.1	52	245.56	1	245.56	$/HR	38872	CY	332.6	CY/HR	116.9	HR	28706
988G EROPS (9-38) (3Q03)	9010	40.05	0.1	52	152.37	1	152.37	$/HR					207.9	HR	31678
CLAB					41.55	1	41.55	$/HR					207.9	HR	8638
Foreman Average, Outside					57.3	1	57.3	$/HR					207.9	HR	11913
5,000 gal H2O truck Diesel (20-17) (1Q04)	4725	28.05	0.1	42	102.39	1	102.39	$/HR					207.9	HR	21287
Pickup Truck Crew 4x4 1 ton (20-17) (2N04)	820	7.8	0.1	0	13.71	1	13.71	$/HR					207.9	HR	2850
															134656

UPDATED MAY 17 2005

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Topsoil 03 Wildcat Loadout TopSoil															
627G EROPS (9-52) (2nd04)	16080	84.6	0.1	52	245.56	2	491.12	$/HR	15549	CY	566	CY/HR	27.5	HR	13506
D9R Semi-U EROPS (9-54) (2H04)	17115	72.3	0.1	52	238.5	1	238.5	$/HR	10000	CY	187	CY/HR	27.5	HR	6559
CLAB					41.55	1	41.55	$/HR					27.5	HR	1143
Foreman Average, Outside					57.3	1	57.3	$/HR					27.5	HR	1576
5,000 gal H2O truck Diesel (20-17) (1Q04)	4725	28.05	0.1	42	102.39	1	102.39	$/HR					27.5	HR	2816
Pickup Truck Crew 4x4 1 ton (20-17) (2N04)	820	7.8	0.1	0	13.71	1	13.71	$/HR					27.5	HR	377
															25471

RECEIVED
MAY 17 2005
Div. of Oil, Gas & Mining

	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Cleanup 01															6566
Regrading 02															154656
Topsoil 03															12471
Total															

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Revegetation Costs																			
	Ground Preparation	Excavation Bulk Bank 2 CY (322BL)	02315 424 0260	1.7	/CY					69						AC		23460	CY	39882
	Seeding	Hydro Spreader (equip. & labor) B-81	Reveg005	19.13	/MSF					69						AC		3005.6	MSF	57497
	Seeding	Seed (material costs)	C0070331	$356.30	/AC					69						AC		69	AC	24585
	Mulch 2 tons per acre	Hay bale	Reveg007	57.2	/ton					69						AC		138	tons	7894
	Subtotal																			[illegible]
	25% Revegetation Rate																			32465
	Subtotal																			[illegible]
	TOTAL																			[illegible]

RECEIVED
MAY 17 2005
Div of Oil, Gas & Mining

APPENDIX C

SOIL AND FOUNDATION INVESTIGATION

SOIL AND FOUNDATION INVESTIGATION

TOWER RESOURCES
COAL HANDLING FACILITIES

HELPER, UTAH

April 1982

ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

1435 WEST 820 NORTH, P. O. BOX 711, PROVO, UTAH 84603
TELEPHONE 374-5771

SOIL AND FOUNDATION INVESTIGATION

TOWER RESOURCES
COAL HANDLING FACILITIES

HELPER, UTAH

April 1982

ROLLINS, BROWN AND GUNNELL, INC.
Professional Engineers
1435 West 820 North, P.O. Box 711
Provo, Utah 84603

ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

April 2, 1982

Tower Resources, Inc.
P.O. Box 1027
Price, UT 84501

ATTN: Mike Glasson

Gentlemen:

A soil and foundation investigation has been completed at the proposed site for the Tower Resources, Inc. coal handling facilities near Helper, Utah. The investigation was performed to define the characteristics of the subsurface material throughout the soil profile so that satisfactory substructures could be designed to support the facilities contemplated in this area. The work has been performed in a manner to accomplish the basic objective, and the results of the investigation, along with pertinent recommendations for foundation design, are outlined in the following sections of this report.

The information contained in the report is discussed under the following headings: (1) Existing Site Conditions, (2) Subsurface Soil and Water Conditions, (3) Foundation Considerations and Recommendations, (4) Site Preparation, Compacted Fill Requirements and Lateral Earth Pressures, and (5) Results of Field and Laboratory Tests.

1. EXISTING SITE CONDITIONS

The proposed site is located approximately 3.8 miles west of U.S. Highway 50 near Helper, Utah. The general layout of the facilities contemplated throughout the site is presented in Figure No. 1. The subsurface materials throughout this area are alluvial deposits laid down by streamflow through the area.

The topography of the site slopes to the east and south, and the area is dissected by a number of small drainage channels. Except for a substantial amount of coal fill which has been placed in the vicinity of Sites 1, 2 and 3, no man-made fill appears to exist throughout the area.

No major structures are located in the immediate vicinity of the proposed site from which foundation performance in this area can be inferred.

No water conveyance facilities or other water bodies are located in the immediate vicinity of the site which would affect the groundwater level in this area.

Other than the information provided above, no environmental factors appear to exist at this site which would adversely affect foundation performance.

2. SUBSURFACE SOIL AND WATER CONDITIONS

The characteristics of the subsurface material throughout the area were defined by drilling eight test borings to depths of between 20 and 45 feet below the existing ground surface. The logs for the eight test holes are presented in Figures 2 through 5, and it will be observed that the subsurface material generally consists of cohesive soils underlain by a gray shale. In the vicinity of Test Holes 1 and 2, coal fill exists for a depth of between 9 and 12 feet below the existing ground surface.

During the subsurface investigation, sampling was performed at 3-foot intervals throughout the upper 15 feet of the soil profile and at 5-foot intervals thereafter. Both disturbed and undisturbed samples were obtained during the field investigations. Disturbed samples were obtained by driving a 2-inch, split-spoon sampling tube through a distance of 18 inches, using a 140-pound weight dropped from a distance of 30 inches. The number of blows to drive the sampling spoon through each 6 inches of penetration is shown on the boring logs. The sum of the last two blow counts, which represents the number of blows to drive the sampling spoon through 12 inches, is defined as the standard penetration value.

The standard penetration value provides a reasonable indication of the in-place density of sandy-type materials; however, the standard penetration value only provides an indication of the relative stiffness of cohesive soils, since the penetration resistance of this material is a function of the moisture content.

Undisturbed samples were obtained at various locations throughout the soil profile at the site by pushing a 2.5-inch, thin-walled shelby tube into the subsurface material using the hydraulic pressure on the drill rig. The locations at which undisturbed samples were obtained are presented on the boring logs.

Each test hole was extended until shale was encountered, and the hole was advanced in the shale for several feet using a rock bit or by coring. An attempt was made to sample the shale using the standard split spoon sampler. However, at essentially all locations refusal was encountered when an attempt to sample was performed.

Each sample obtained in the field was classified in the laboratory according to the Unified Soil Classification System. The symbol designating the soil type according to this system is presented on the boring logs. A description of the Unified Soil Classification System is presented in Figure No. 6, and it will be noted that the cohesive material throughout the soil profile generally classifies as an ML or a CL-ML type soil. A few areas were encountered, however, where CL-1 type material exists. It is concluded, therefore, that all of the overburden materials throughout the proposed site are low plasticity silts and clays.

In penetrating the shale layer throughout the subsurface profile at this site, it was necessary to use water as the drilling fluid. The use of the water makes an accurate determination of the groundwater level in this area uncertain during the period of time when the drilling was performed. It is our opinion, however, that the groundwater level throughout the site is at a substantial distance below the existing ground surface and groundwater will not be a problem throughout the area.

In order to determine if groundwater actually exists throughout the site, observation wells extending to a depth of 50 feet below the ground surface were installed at the locations shown in Figure No. 1. It is recommended that these wells be monitored at frequent intervals to determine if a static groundwater level exists at an elevation which would influence foundation performance and construction throughout the site.

3. FOUNDATION CONSIDERATIONS AND RECOMMENDATIONS

As of the preparation of this report, no details are available on any of the structures contemplated throughout the area, and recommendations outlined below for foundation design must be considered of a preliminary nature. The following recommendations will be expanded when more information is available as to the type of facility, the size of the structures and the anticipated structural loads.

A. Truck Dump Facilities

It is anticipated that the truck dump facilities will include an earth fill ramp and a truck dump hopper. The characteristics of the subsurface material in the vicinity of the truck dump facilities is defined by Test Hole 1, and it will be observed that the subsurface material throughout the profile consists of a surface coal layer underlain by approximately 20 feet of brown sandy silt. The subsurface silts throughout the general area do not appear to be highly compressible; however, it can be expected that several inches of settlement will occur due to the fill loads.

Since the subsurface soils are silty-type materials, it is expected that the time delay associated with the consolidation of these materials will be relatively small and that consolidation will be essentially complete by the time the fill has been placed.

It will be noted from Test Hole 1 that coal exists in the upper 9 feet of the soil profile at this location. Coal is not capable of supporting the truck dump hopper, and we recommend that the coal be excavated and replaced with compacted fill material. If a source of granular material is available, we recommend that the granular material be used as compacted fill to support the truck dump hopper. If a source of granular material is not readily available, the on-site sandy silt can be used as compacted fill in this area. If the sandy silt is densified in accordance with recommendations outlined in the subsequent section of this report, we recommend that the foundations for the truck dump hopper be proportioned using an allowable soil bearing pressure of 2,500 pounds per square foot, provided the major portion of the zone of significant stress for the foundations is in the fill material.

The exact elevation of the foundations for the truck dump hopper is not known as of the preparation of this report. If the elevation of the foundations for the truck dump hopper is located such that a significant portion of the zone of significant stress for the foundations exists within the natural material, we recommend that the foundations be proportioned using an allowable soil bearing pressure of 1,500 pounds per square foot.

In order for compacted fill beneath structural foundations to be effective, the width of the compacted fill should be at least equal to twice the width of the footing.

B. Crusher and Screening Building

As indicated earlier in this report, the size of the building contemplated for this area and the characteristics of the crusher are not known as of the preparation of this report. It is assumed, however, that the structural loads for the building will be relatively small, and that column loads will not likely exceed 75 kips and wall loads will not likely exceed 3 to 4 kips per lineal foot.

Test Hole 2 defines the characteristics of the subsurface material in the vicinity of the crusher and screening building. It is apparent from the log for Test Hole 2 that coal fill extending to a depth of approximately 13 feet exists at this location. The coal is not capable of supporting structural foundations, and either the coal should be removed and replaced with compacted fill, or drilled caissons extending to the gray shale layer in the vicinity of 20 feet below the ground surface should be used to support the structures for this facility.

The on-site sandy silt may be used as compacted fill to support the structures for the building throughout this area provided it is densified in accordance with recommendations outlined in a subsequent section of this report. If compacted fill is used to support the crusher building, we recommend that the foundations be proportioned using an allowable soil bearing pressure not exceeding 2,500 pounds per square foot.

Since the crusher and screening facilities will transmit vibratory loads to the subsurface material, it may desirable to support the foundations for these facilities on drilled caissons extending to the gray shale. Recommended caisson capacities for caissons extending to the gray shale are tabulated below:

Caisson Tip Diameter (feet)	Caisson Capacity (kips)
2	122
3	183
4	244

If the foundations for the facilities at this location are provided in accordance with the above recommendations, the maximum settlement of any footing should not exceed 1 inch and differential settlement throughout the structure should not exceed 0.5 inches, which in our opinion will be satisfactory for the proposed facilities.

C. Train Load-Out Facilities

It is anticipated that the facilities at this location will consist of elevated bins equipped to discharge coal into the freight cars. The detailed nature of these facilities, along with the structural loads, is not known as of the preparation of this report.

The characteristics of the subsurface material in the vicinity of the load-out facility is defined by Test Hole 3, and it will be observed that the subsurface material in this area consists of a 6-foot layer of coal fill underlain by a brown sandy silt and silty clay extending to a depth of about 41 feet below the existing ground surface, at which point shale was encountered. The coal fill located in the upper 6 feet of the soil profile at this site is not capable of supporting structural foundations and should be replaced with compacted fill material.

The allowable soil bearing pressure of the natural brown sandy silt is about 1,500 pounds per square foot at this location, and if the structural loads for the proposed facility are relatively small, it may be possible to support the proposed facility using spread foundations on the natural material. It is our opinion, however, that since the coal fill must be removed the most desirable foundation type for this structure will be to use spread foundations on compacted fill.

The natural sandy silt existing throughout the area can be used as compacted fill provided it is densified in accordance with recommendations outlined in the following sections of this report.

If the depth of the compacted fill beneath the structural foundations at this location is at least equal to the width of the footing, the foundations for the proposed facilities may be proportioned using an allowable soil bearing pressure of 2,500 pounds per square foot.

An alternate to supporting the proposed facility using spread foundations on compacted fill would be to use drilled caissons extending to the shale layer. Since the depth to the shale layer is over 40 feet, foundations of this type will likely be considerably more expensive than spread foundations on compacted fill. If, however, the structural loads for the proposed facility are of such a magnitude that drilled caissons will be required, we are prepared to provide allowable caisson capacities at this location.

D. Facilities in the Vicinity of Test Hole 4

The type of facility contemplated in the vicinity of Test Hole 4 is not known as of the preparation of this report. It appears as if the facility at this location will be some component of a conveyor system. The subsurface material at this location is defined by the log associated with Test Hole 4, and it will be observed that the subsurface material consists of approximately 20 feet of silt and clay overlying the shale.

The results of laboratory tests performed on the subsurface material at this location indicates that the cohesive materials are in a medium-dense state and are capable of supporting 1,500 to 2,000 pounds per square foot, and we recommend that spread foundations on the natural material be used to support any structure located at this site.

E. Clean Coal Pile

It will be noted that the characteristics of the subsurface material throughout the alignment of the clean storage pile is defined by Test Holes 5, 6, 7 and 8. It will be noted from the boring logs for these test holes that the overburden material consists predominantly of silty-type soil and that shale was encountered at depths of between 15 and 35 feet below the existing ground surface. The bottom of the shale appears to dip in a southerly direction.

We understand that either a concrete tunnel or a steel multi-plate tunnel accomodating transfer facilities will be located beneath the clean coal pile. The size of the underground structure at this location is not known; however, it is possible that the bottom of the tunnel in the northerly end of the pile may be relatively close to the shale surface, while a substantial amount of overburden material will be located beneath the bottom of the tunnel and the top of the shale towards the southerly end of the tunnel. This situation could lead to several inches of differential settlement between the north and south ends of the tunnel under the loads associated with the clean coal pile.

If differential settlement is not a problem, the tunnel may be located directly on the existing silt and clay material. If differential settlement throughout the area is critical, excavation and replacement of a portion of the natural overburden material in the southerly end of the site may be required to reduce the magnitude of the differential settlement.

It is recommended that further consideration be given to foundation performance in this area when the exact details of the proposed facility at this location are known.

4. SITE PREPARATION, COMPACTED FILL REQUIREMENTS AND FLEXIBLE PAVEMENT DESIGN

As indicated earlier in this report, a substantial amount of excavation, backfilling and grading will likely be required throughout the site to accomodate the proposed facilities. The coal fill in the vicinity of Test Holes 1, 2 and 3 is not capable of supporting structural foundations and should be replaced with compacted fill. If possible, the compacted fill placed throughout the area should be a well-graded granular material with a maximum size less than 4 inches and with not more than 10 to 15 percent passing a No. 200 sieve.

It is recognized that granular fill is relatively scarce in the Price-Helper area, and the existing site material may be used as compacted fill to support structural foundations provided it is densified to an in-place unit weight equal to 95 percent of the maximum laboratory density as determined by ASTM D 1557-78.

If embankments are contemplated in the area where the truck dump facilities will be located, we recommend that all material placed within the dump embankments be densified to an in-place unit weight equal to 95 percent of the maximum laboratory density as indicated above. The on-site sandy silt or silty clay can be used in the truck dump embankments.

It is recommended that either a tamping-type roller or rubber-tired rollers be used to densify the sandy silts or silty clays used for compacted fill throughout the site. Since the compacted fill will support structural foundations, it is imperative that appropriate quality control be performed to insure that the compacted fill is densified in accordance with the specifications indicated above.

It is anticipated that an excavation 10 to 12 feet deep will be required in the area where the clean coal pile will be located. Since the subsurface materials in this area are cohesive-type soils and since no groundwater table was encountered in the area, it is not anticipated that any difficult excavation problems will be encountered.

If a portion of the subsurface material in the southerly end of this facility is excavated and replaced with compacted fill to reduce the likelihood of differential settlement for structures in this area, we recommend that the compacted fill be densified in accordance with the recommendations outlined above.

In areas where driveways or haul roads are located, we recommend that the upper 3 to 4 inches of the natural material be stripped to remove any organic matter which may exist in the soil profile at this location. Following the stripping operations, we recommend that the upper 10 inches of the natural material be scarified and redensified to an in-place unit weight equal to 90 percent of the maximum laboratory density specified herein.

The thickness of flexible pavement recommended for driveways and haul roads has been calculated using the following equation developed by the Corps of Engineers:

$$t = (23.1 \text{ Log } C + 14.4) \sqrt{P\left(\frac{1}{8.1\ CBR} - \frac{1}{p\pi}\right)}$$

Where: C = Number of coverages
P = Wheel load
p = Tire pressure
CBR = California Bearing Ratio

It will be noted from the above equation that the thickness of the flexible pavement is a function of the wheel load, the number of coverages, the tire pressure and the CBR value. No CBR tests were performed during this investigation; however, based upon the results of tests performed on similar materials, it is not anticipated that the CBR value of these materials will exceed 3 to 5 percent.

The number of coverages and the wheel loads contemplated on haul roads and driveways are also not known as of the preparation of this report, and certain assumptions have been made relative to these parameters. The recommended thickness of flexible pavement is based upon the following assumptions:

A. Number of coverages = 50,000

B. Wheel load = 14,000 pounds

C. CBR value = 3 percent

D. Tire pressure = 70 psi

Substituting the above parameters into the flexible pavement equation indicates a total flexible pavement thickness of 28 inches. Fifteen inches of the flexible pavement may consist of bankrun sand and gravel, while the remainder of the pavement should consist of untreated granular base, unless an asphalt surface course is contemplated.

All base material should be densified to an in-place unit weight equal to 90 percent of the maximum laboratory density indicated above, and the gradation of the untreated granular base should conform to the following specifications:

Sieve Size	Percent Passing
1"	100
.5"	70 - 100
No. 4	41 - 68
No. 16	21 - 41
No. 50	10 - 27
No. 200	4 - 13

If an asphalt surface course is contemplated for any of the driveways or haul roads, we recommend that it have a minimum thickness of 3 inches and that the flexible pavement under these conditions consist of 3 inches of an asphalt surface course plus 10 inches of untreated granular base and 15 inches of bankrun sand and gravel. The mineral aggregates in the untreated granular base should conform to Section 402 of the standard specifications of the Utah State Department of Transportation. Mixing, placing and densification of all asphalt materials should also conform to State standards.

5. RESULTS OF FIELD AND LABORATORY TESTS

Field and laboratory tests performed during this investigation included standard penetration tests, in-place unit weight, natural moisture content, Atterberg limits, mechanical analyses and consolidation tests. A summary of all tests performed during the investigation, with exception of the consolidation tests, is presented in Table No. 1, Summary of Test Data.

It will be observed from Table No. 1 that the natural moisture content of the subsurface material is very dry and is generally several percentage points below the plastic limit. It will also be noted that most of the materials throughout the profile at this site classify as ML or CL-ML type materials. With exception of one or two tests, the in-place unit weight of the subsurface material is generally in excess of 95 pounds per cubic foot.

Cores obtained from the shale in Test Holes 5 and 6 indicate that the shale material has a high unit weight. It will also be noted from the results of the Atterberg limits that the plastic index is generally less than 6 percent, and in some cases, the silty material is nearly non-plastic.

The compressibility characteristics of the overburden material throughout the site were evaluated by performing ten consolidation tests on representative samples obtained from Test Holes 1, 2, 4, 6 and 8; while the compressibility characteristics of the shale material were evaluated by performing two consolidation tests on representative samples obtained from Test Holes 5 and 6. The results of the consolidation tests are presented in Figures 7 through 18. It will be observed that most of the consolidation tests performed on the overburden material indicate that this material is quite highly overconsolidated, and settlement will be relatively small for load intensities less than 1,500 to 2,000 pounds per square foot.

It should be noted that during the consolidation tests, each sample was permitted to absorb water during the loading sequence, in order to determine the affect of moisture on the compressibility characteristics of the subsurface material. It should be noted from the consolidation tests performed on samples of the shale material that the sample obtained at a depth of 19 feet below the existing ground surface in Test Hole 5 indicated some swell potential, while the sample obtained at a depth of 20 feet below the existing ground surface in Test Hole 6 did not swell on the addition of water. The rebound portion of the consolidation curve on this sample, however, indicates that some swell potential may exist.

The conclusions and recommendations presented in this report are based upon the results of the field and laboratory tests which, in our opinion, define the characteristics of the subsurface material throughout the site in a satisfactory manner. If during construction conditions are encountered which appear to be different than those presented herein, it is requested that we be advised in order that appropriate action may be taken.

Very truly yours,

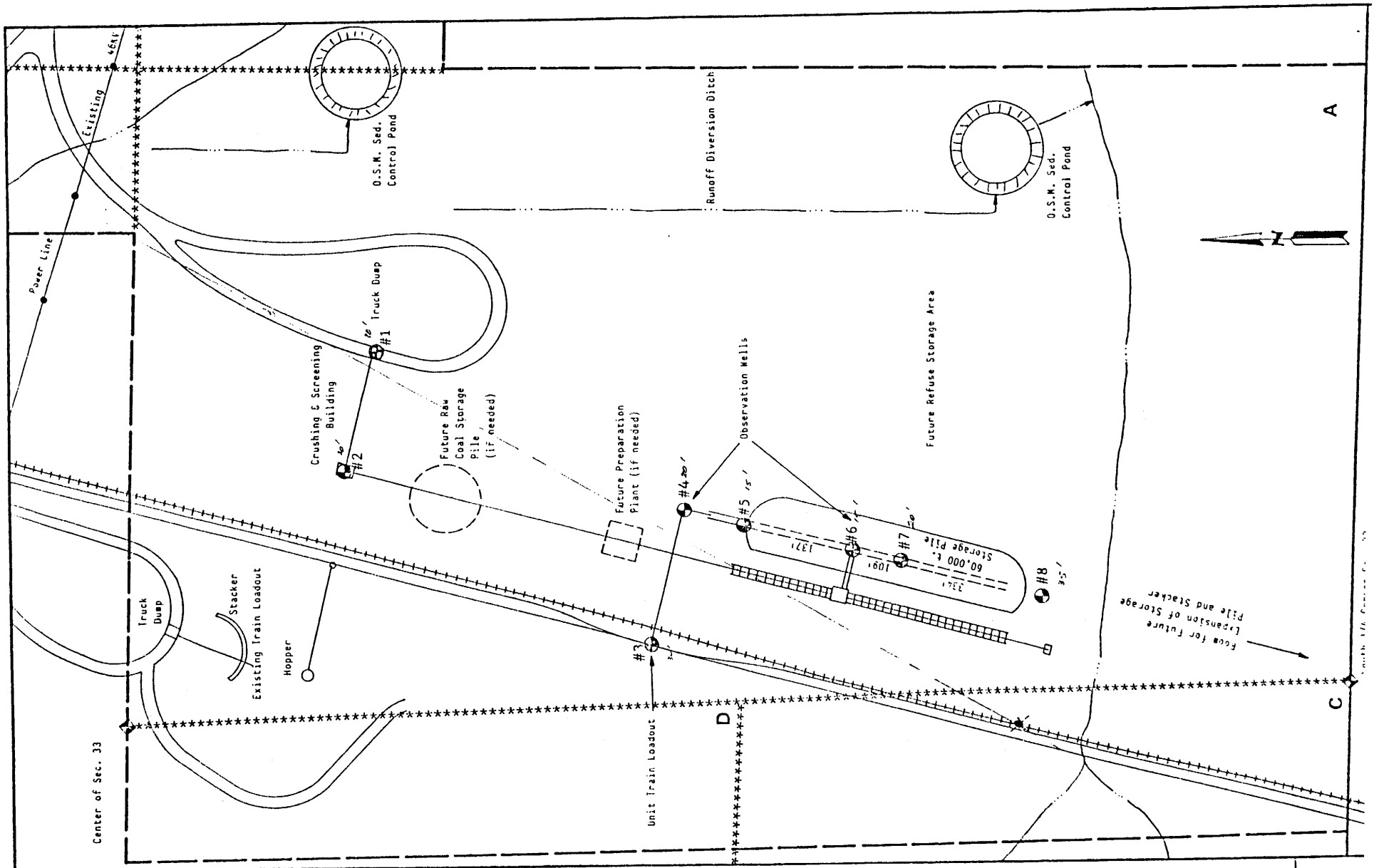
ROLLINS, BROWN AND GUNNELL, INC.

Ralph L. Rollins

Ralph L. Rollins

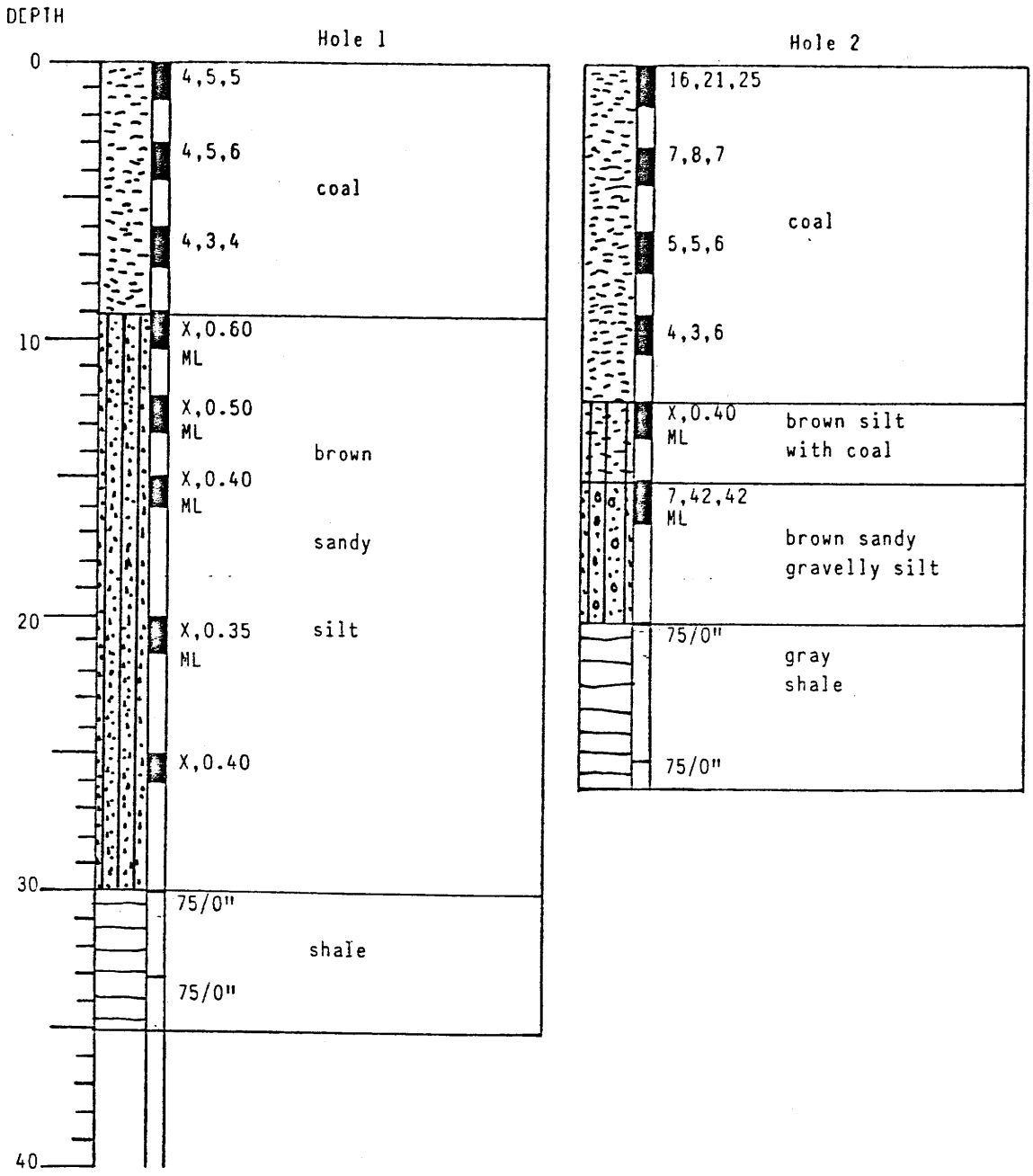
lw

enc.

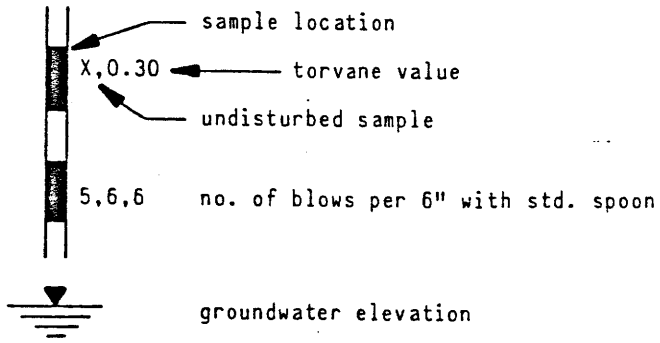


SCALE	**ROLLINS, BROWN & GUNNELL, Inc.**	LOCATION OF TEST HOLES TOWER RESOURCES COAL HANDLING FACILITIES
DESIGNED — CHECKED	CONSULTING ENGINEERS	FIGURE NO. 1
DRAWN — DATE		
APPROVED — LICENSE NO		

Bearing "500"



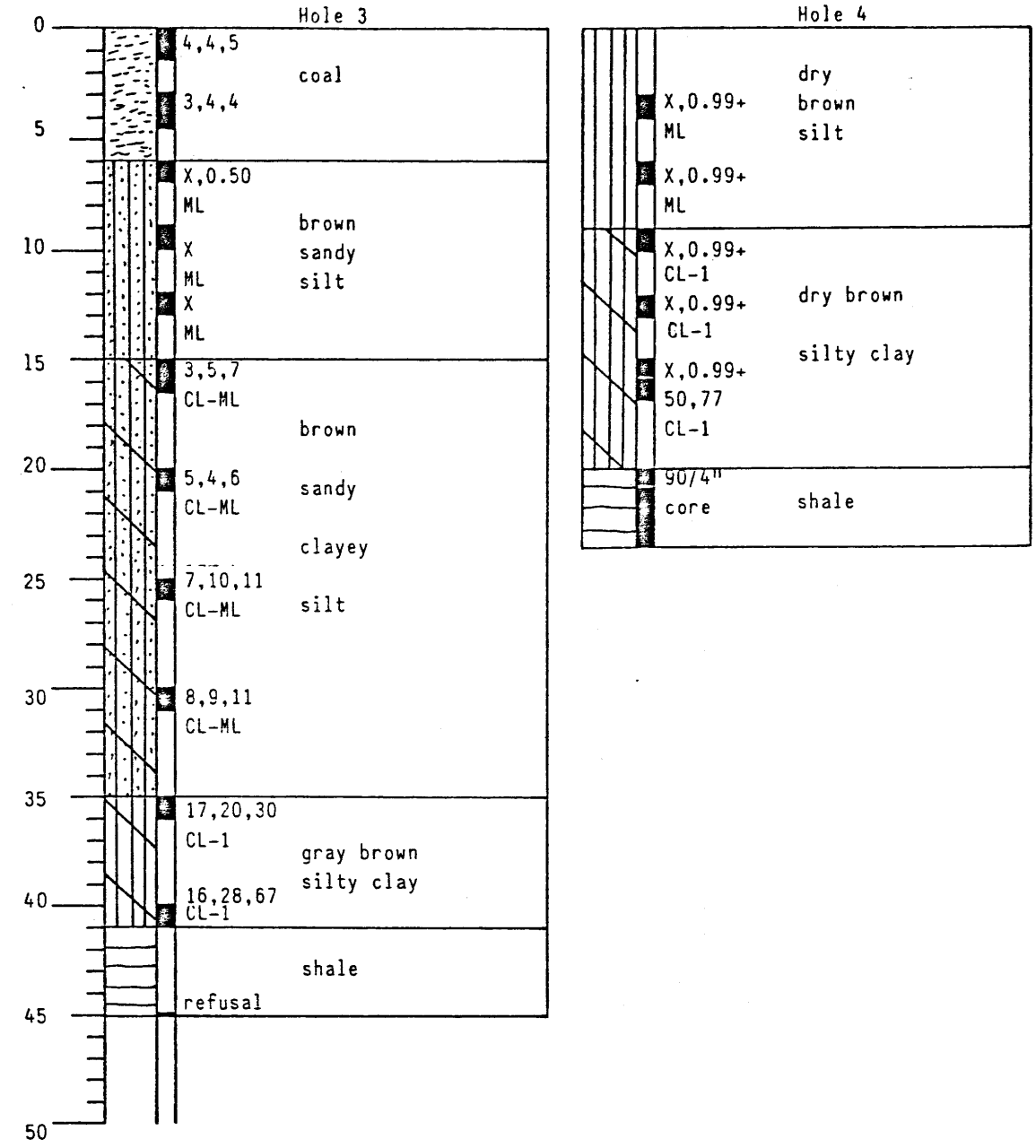
LEGEND



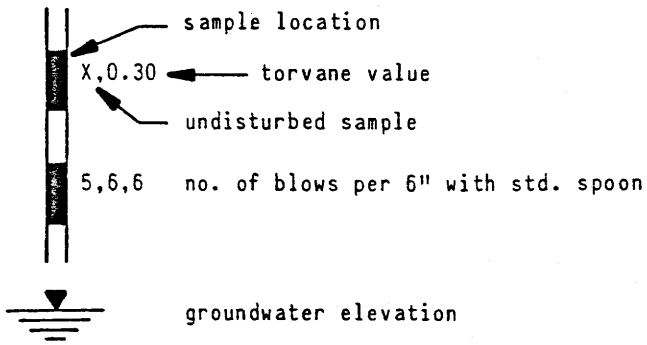
ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

Log of Borings for:
Tower Resources

Figure No. 2



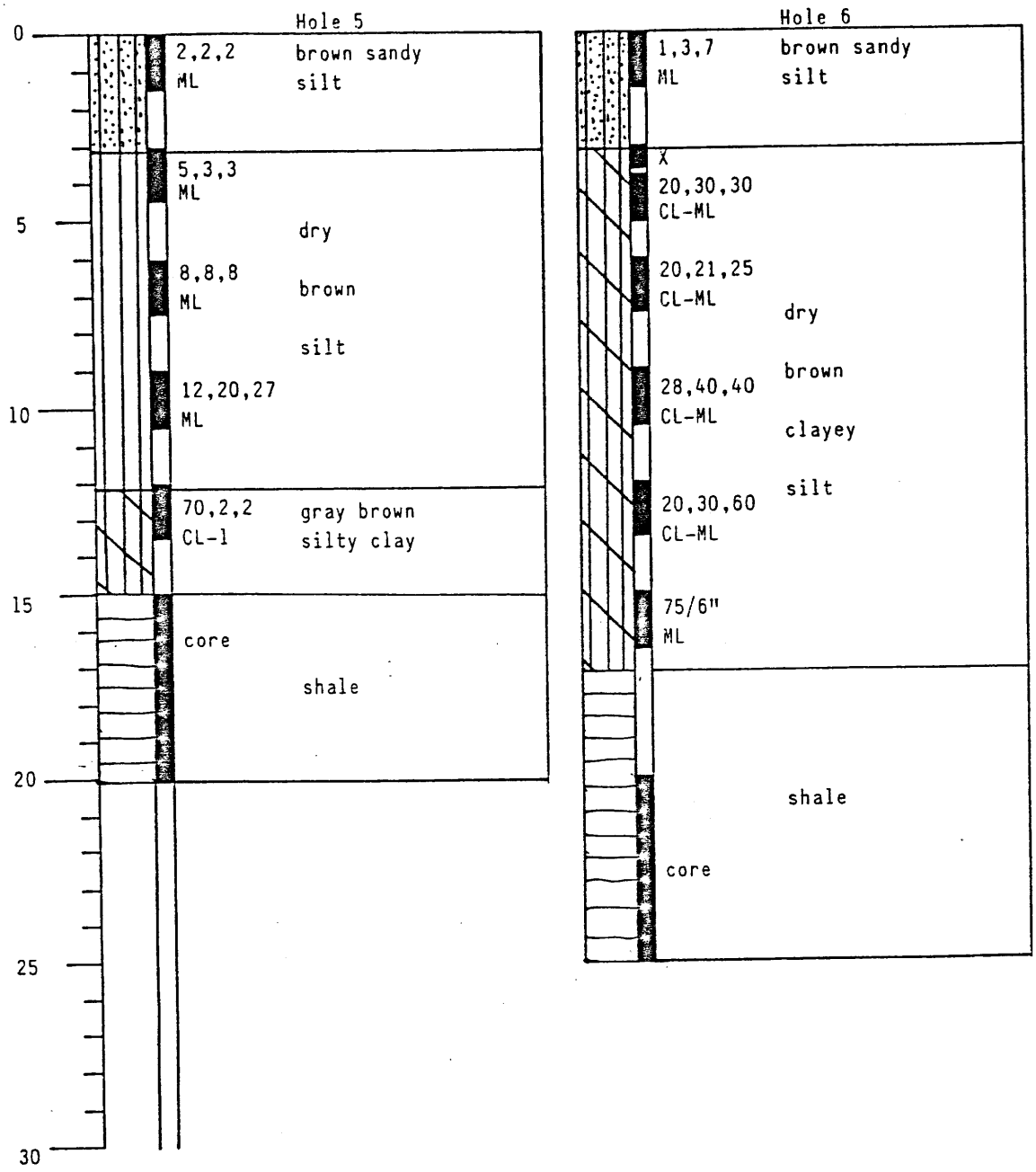
LEGEND



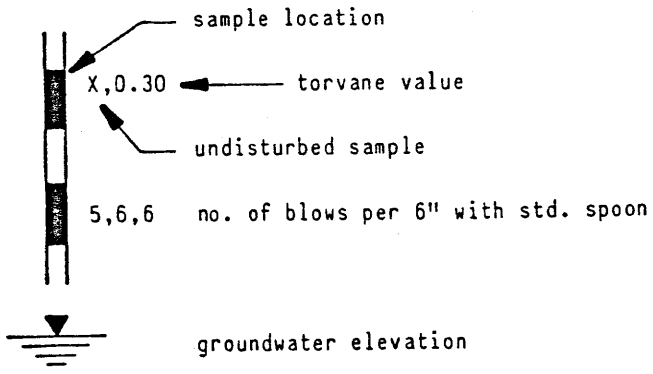
ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

Log of Borings for:
Tower Resources

Figure No. 3



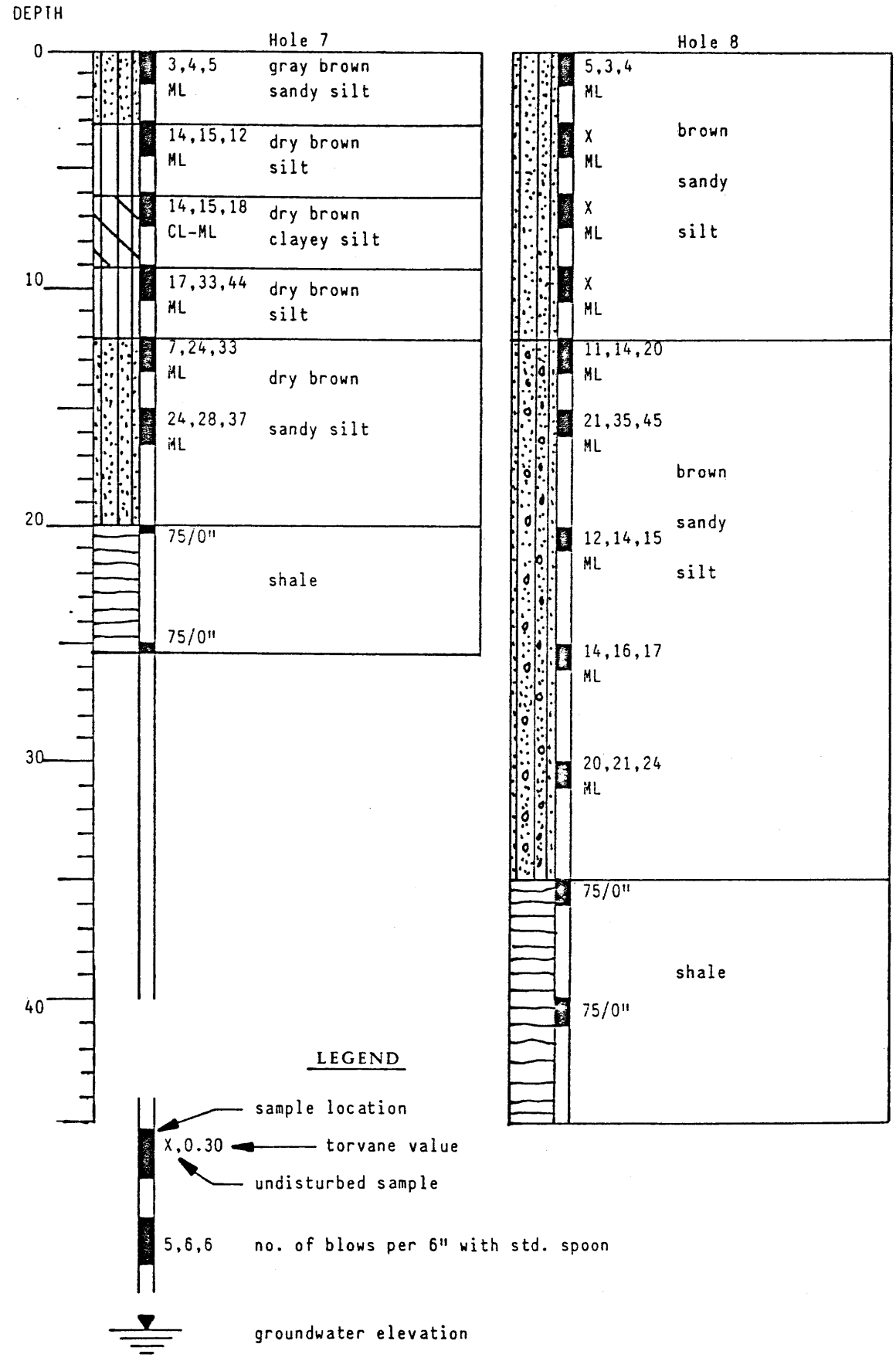
LEGEND



ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

Log of Borings for:
Tower Resources

Figure No. 4



ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

Log of Borings for:
Tower Resources

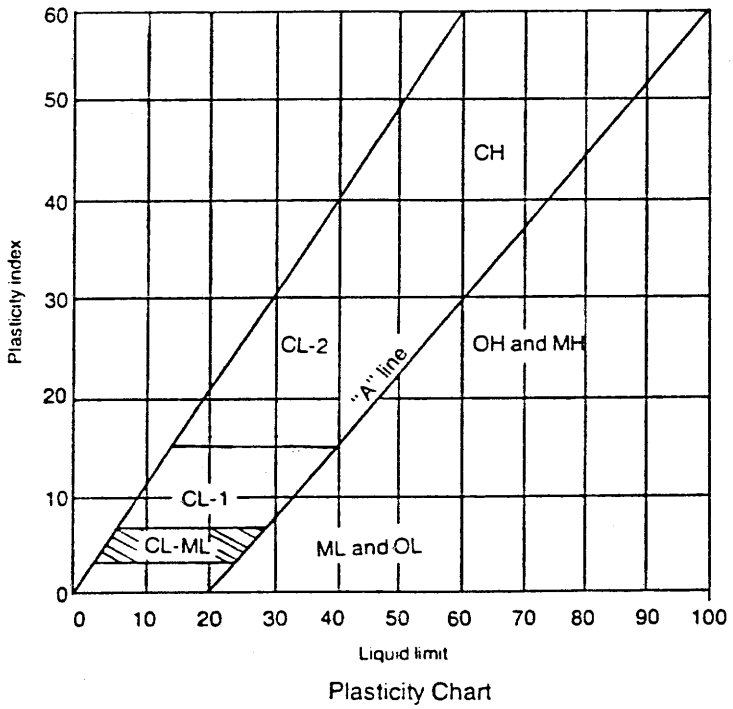
Figure No. 5

Figure No. 6

Unified Soil Classification System

Major divisions		Group symbols	Typical names	Laboratory classification criteria
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size) — Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$Cu = \frac{D_{60}}{D_{10}}$ greater than 4, $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
	Gravels with fines (Appreciable amount of fines)	GM* (d / u)	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
		GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size) — Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$Cu = \frac{D_{60}}{D_{10}}$ greater than 6, $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
		SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
	Sands with fines (Appreciable amount of fines)	SM* (d / u)	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Limits plotting in hatched zone with P.I. between 4 and 7 are borderline cases requiring use of dual sysbols.
		SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. less than 7
Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	
		CL (1 / 2)	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		CH	Inorganic clays of high plasticity, fat clays	
		OH	Organic clays of medium to high plasticity, organic silts	
Highly organic soils		Pt	Peat and other highly organic soils	

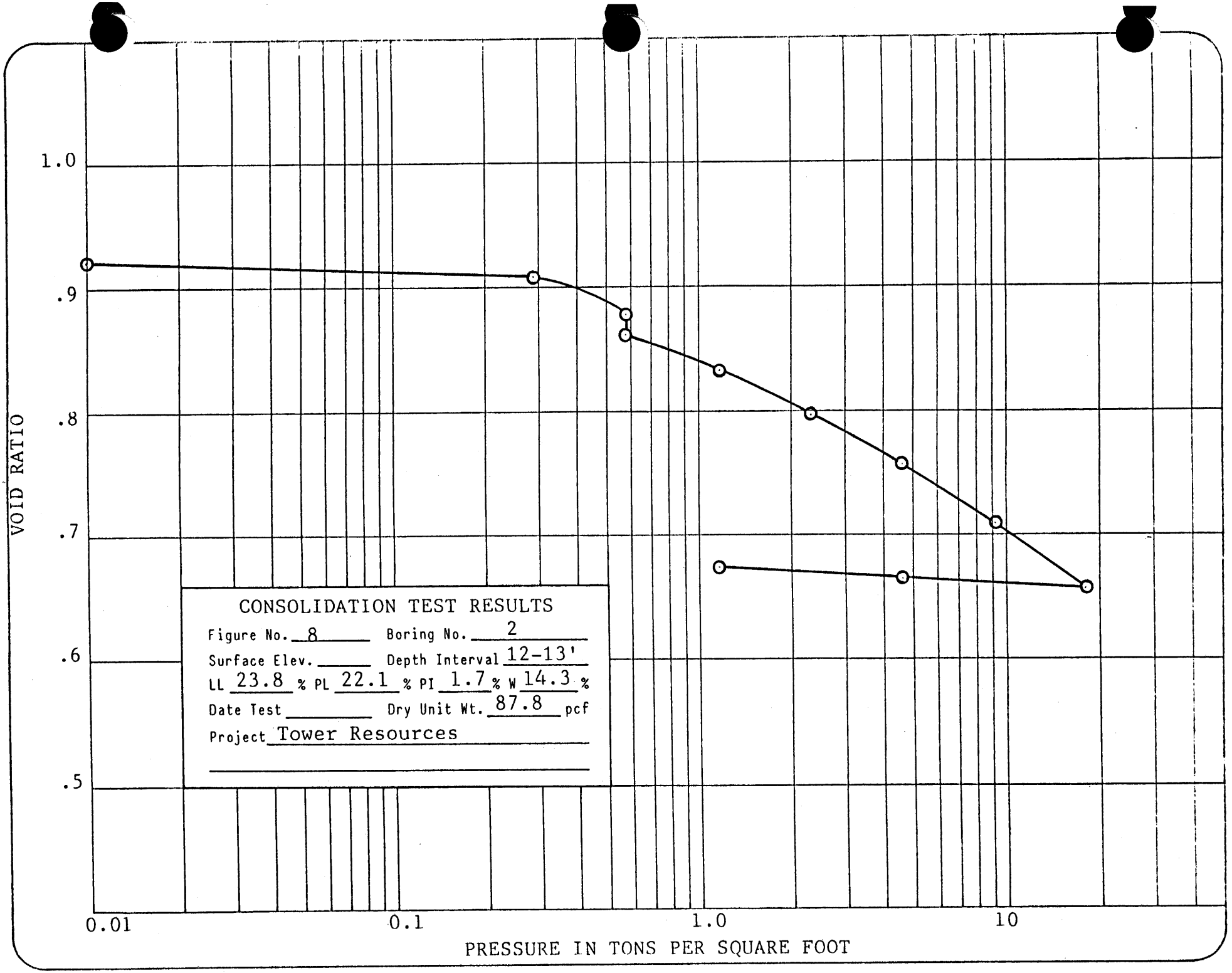
Determine percentages of sand and gravel from grain-size curve.
Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
Less than 5 percent ..... GW, GP, SW, SP
More than 12 percent ..... GM, GC, SM, SC
5 to 12 percent ..... Borderline cases requiring dual symbols**

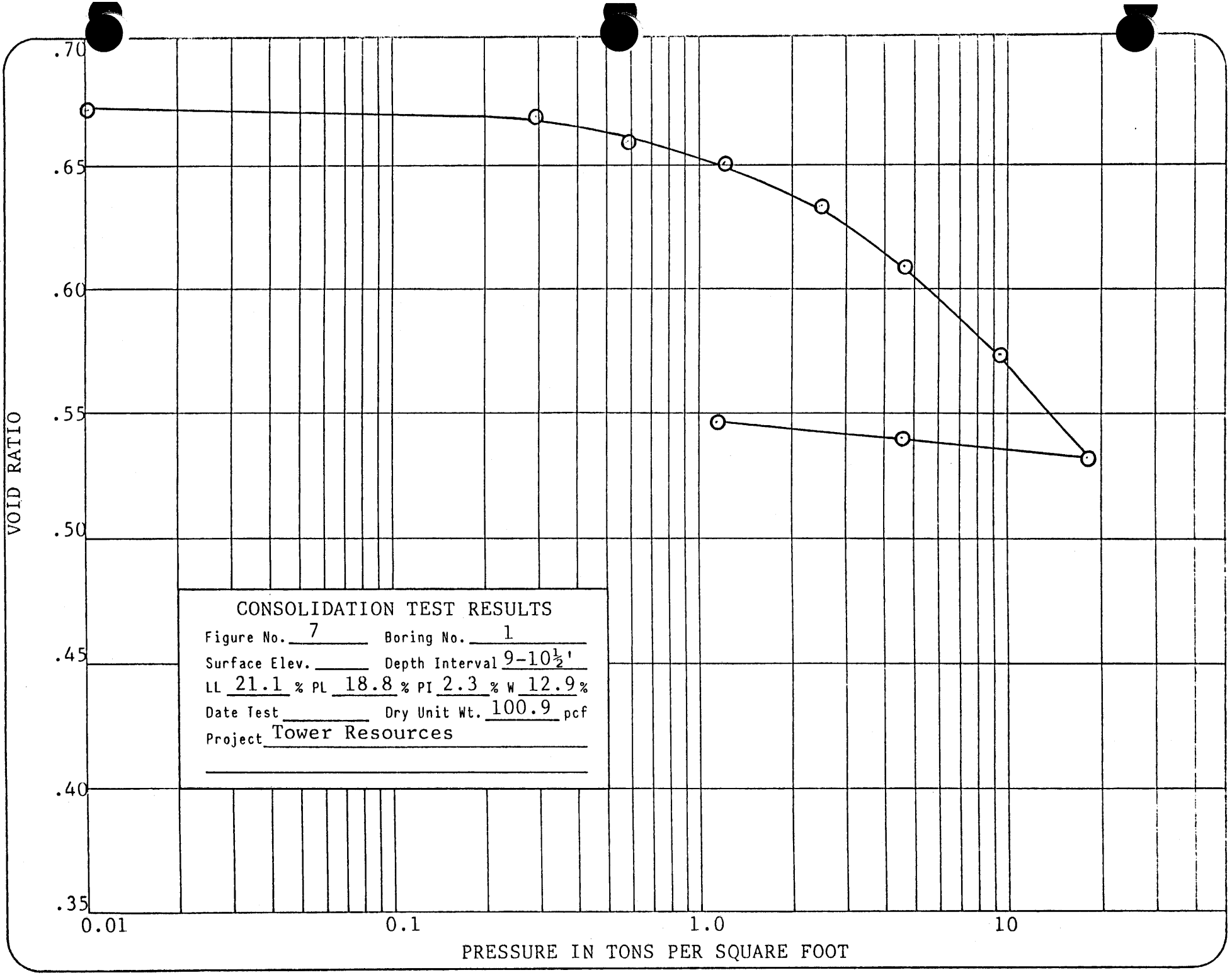


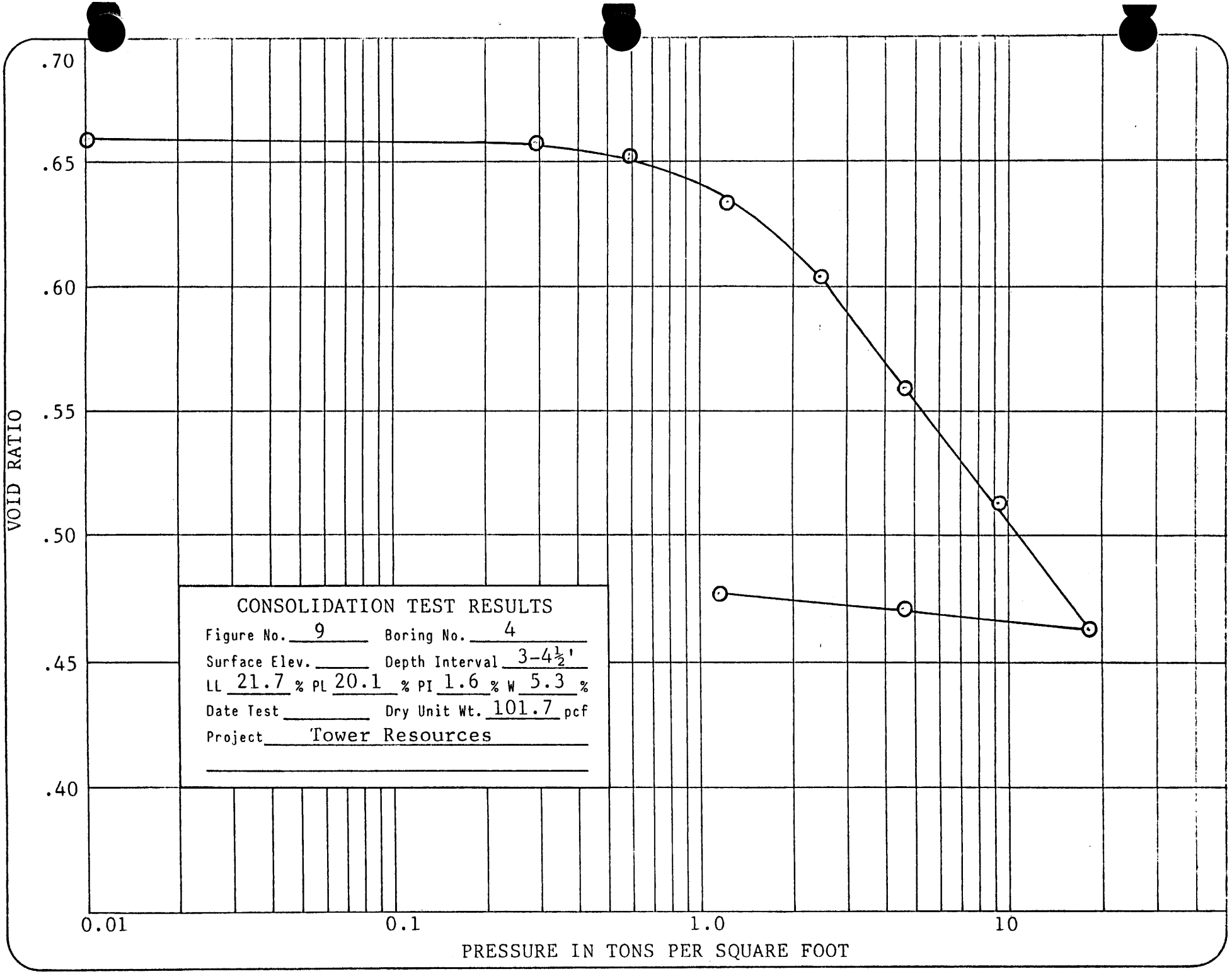
Plasticity Chart

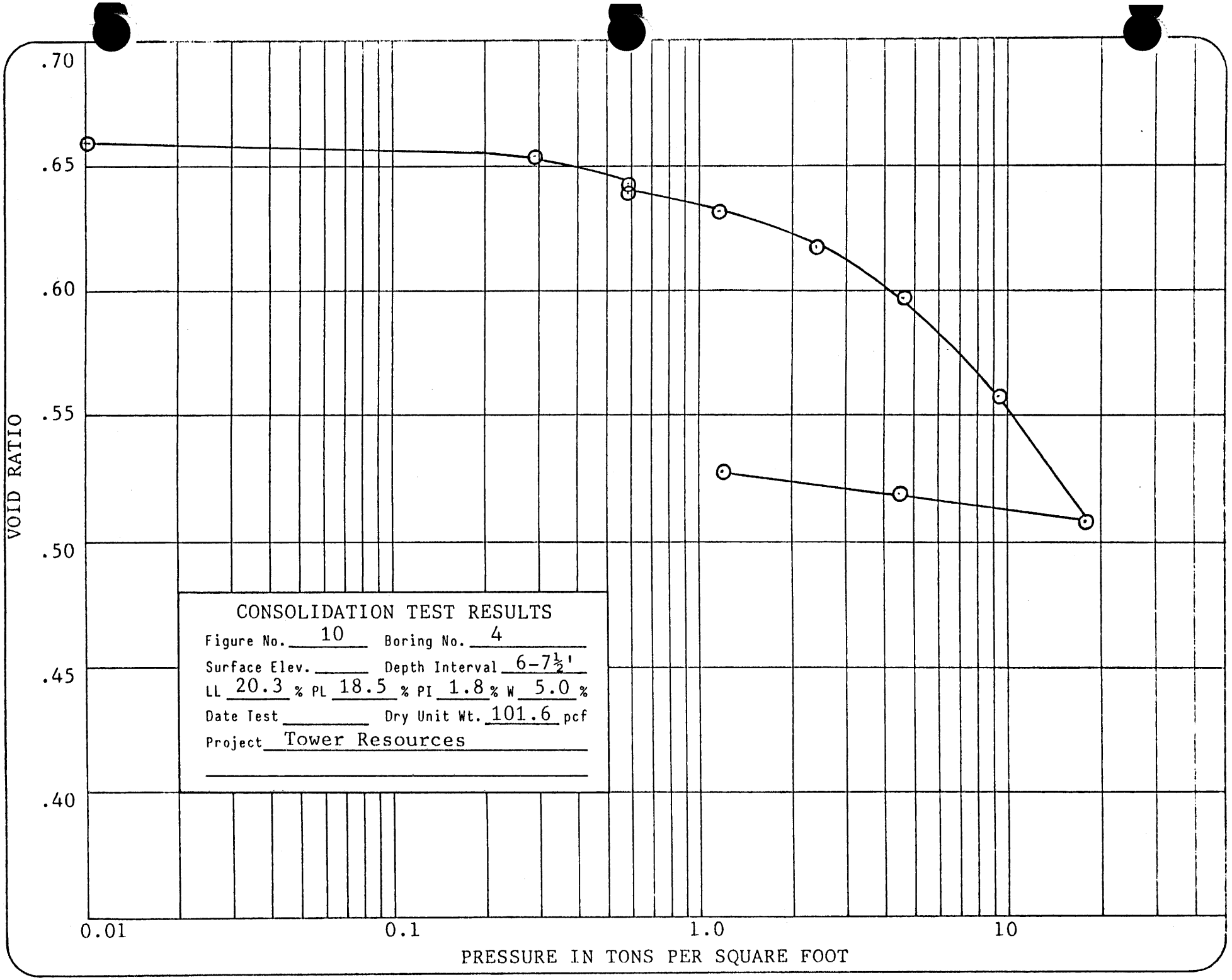
*Division of GM and SM groups into subdivisions of d and u for roads and airfields only. Subdivision is based on Atterberg limits, suffix d used when L. L. is 28 or less and the P.I. is 6 or less, the suffix u used when L. L. is greater than 28.

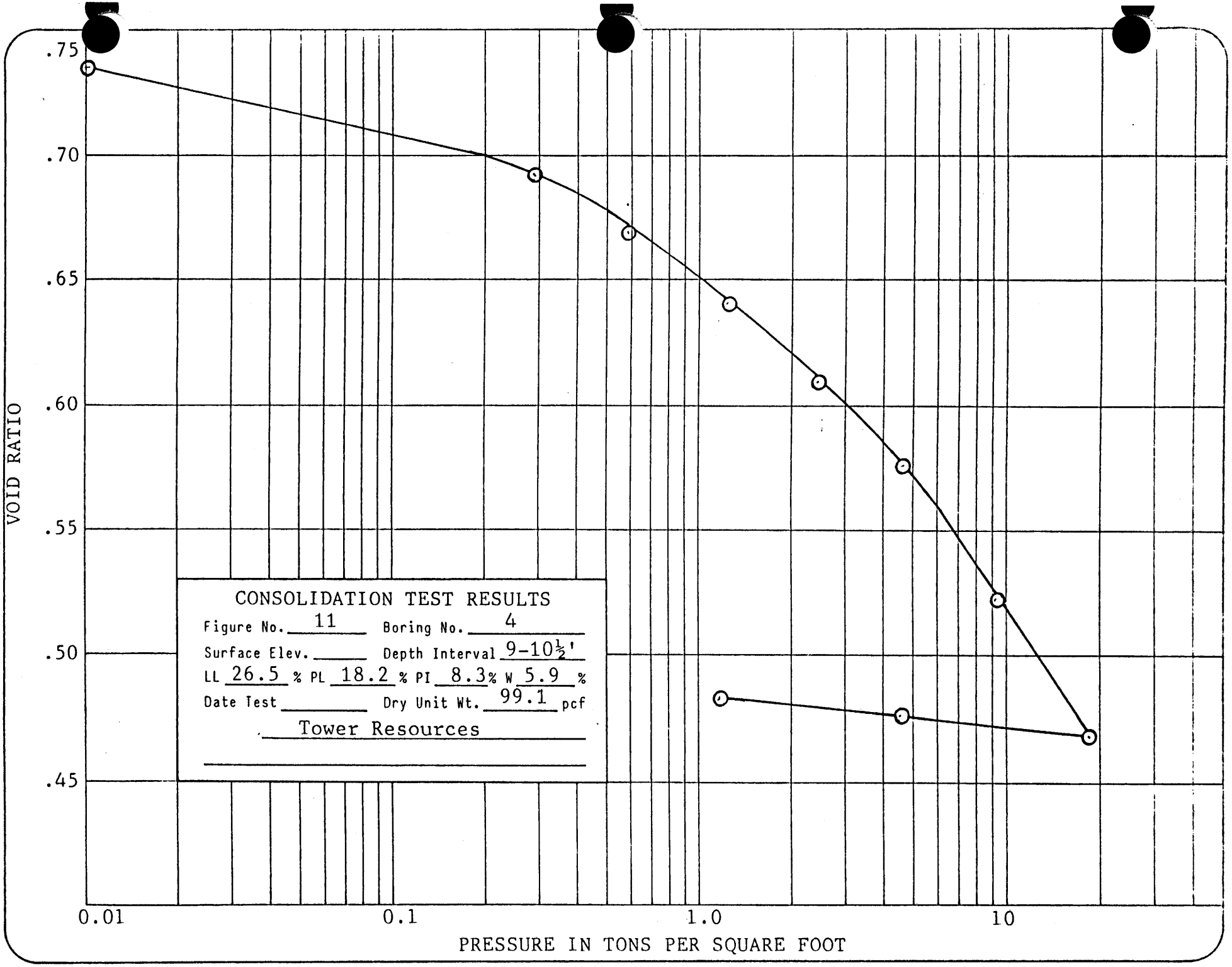
** Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.

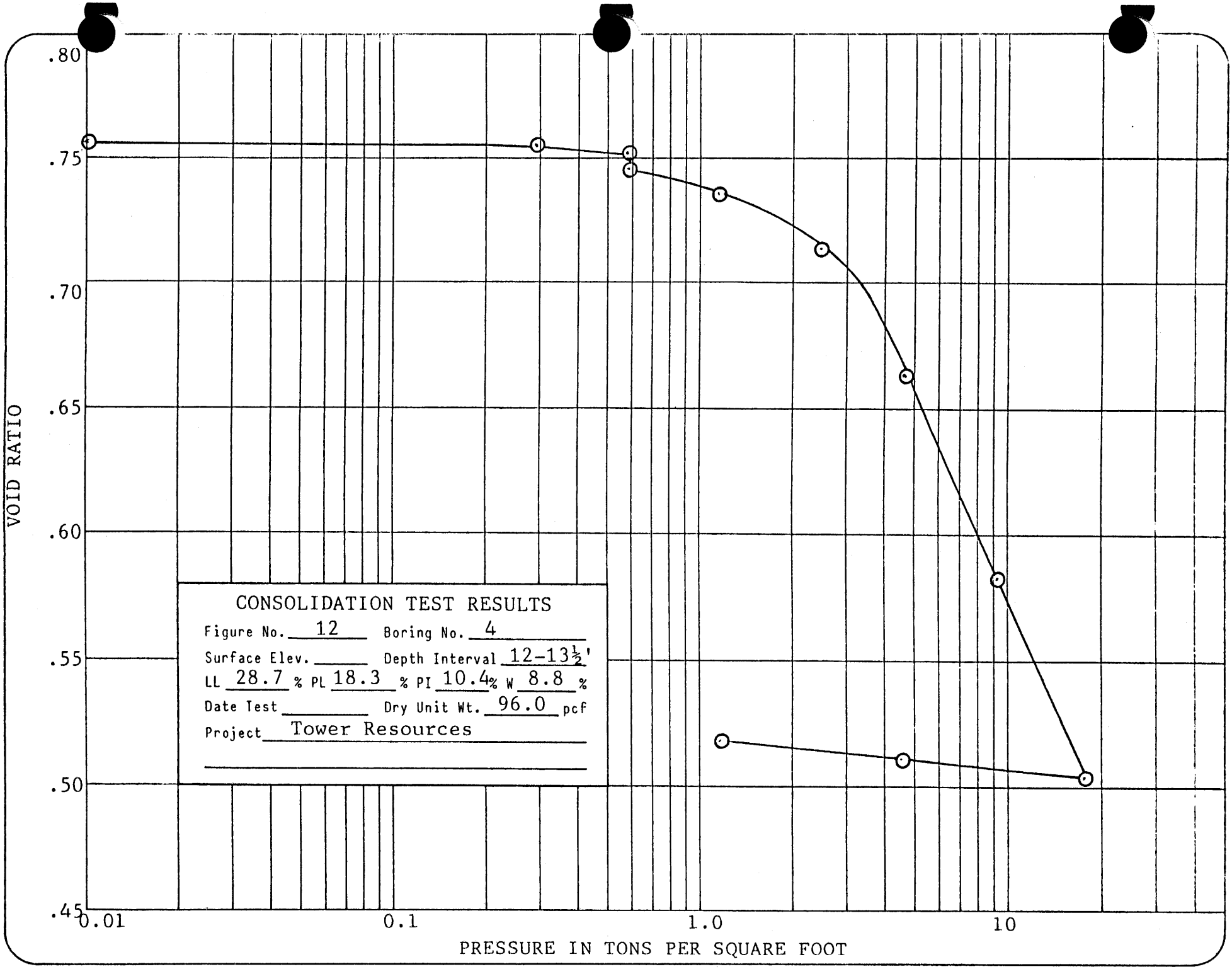

1.0
.9
.8
.7
.6
.5
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 8 Boring No. 2
Surface Elev. Depth Interval 12-13'
LL 23.8 % PL 22.1 % PI 1.7 % W 14.3 %
Date Test Dry Unit Wt. 87.8 pcf
Project Tower Resources

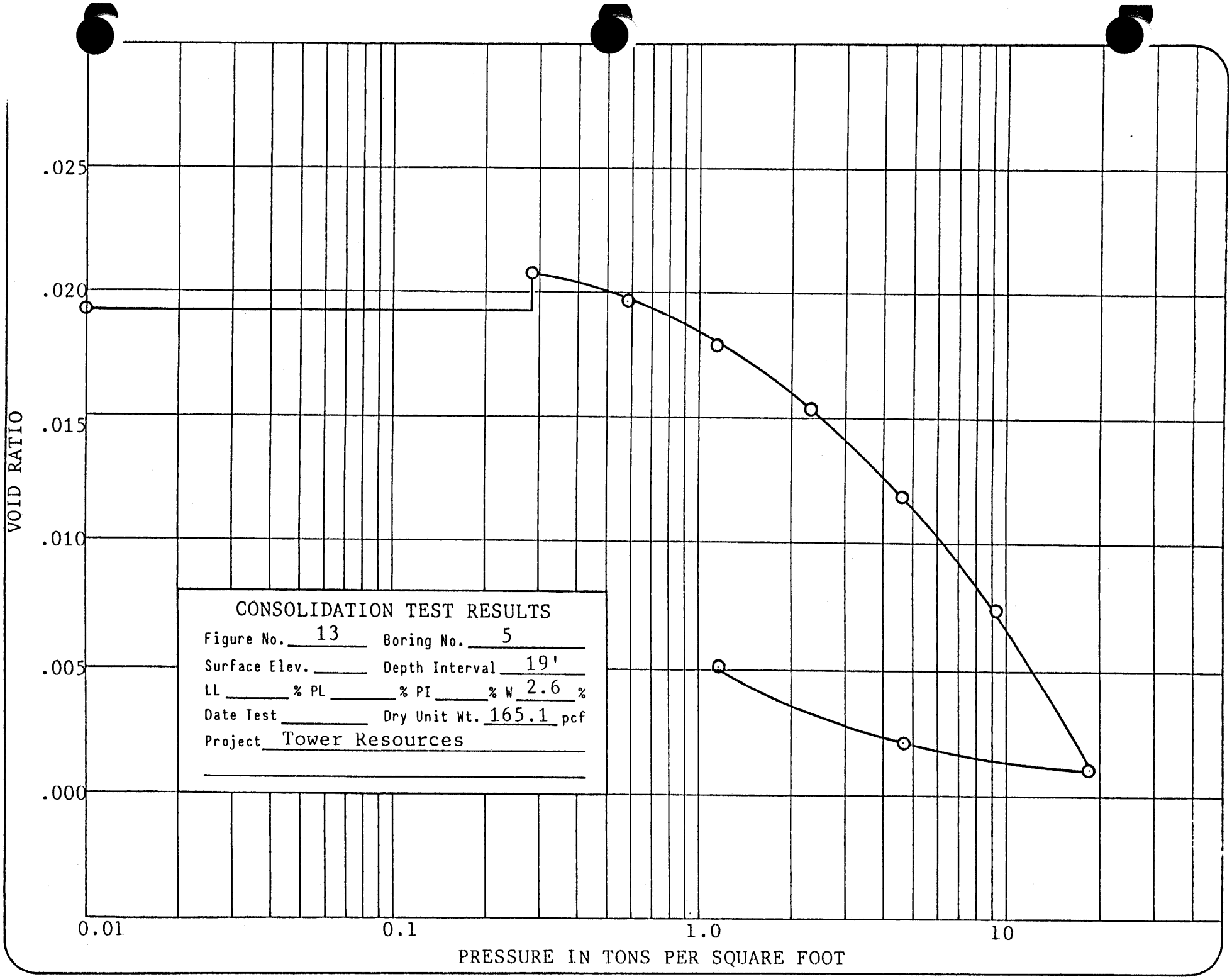

.70
.65
.60
.55
.50
.45
.40
.35
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 7 Boring No. 1
Surface Elev. Depth Interval 9-10½'
LL 21.1 % PL 18.8 % PI 2.3 % W 12.9 %
Date Test Dry Unit Wt. 100.9 pcf
Project Tower Resources

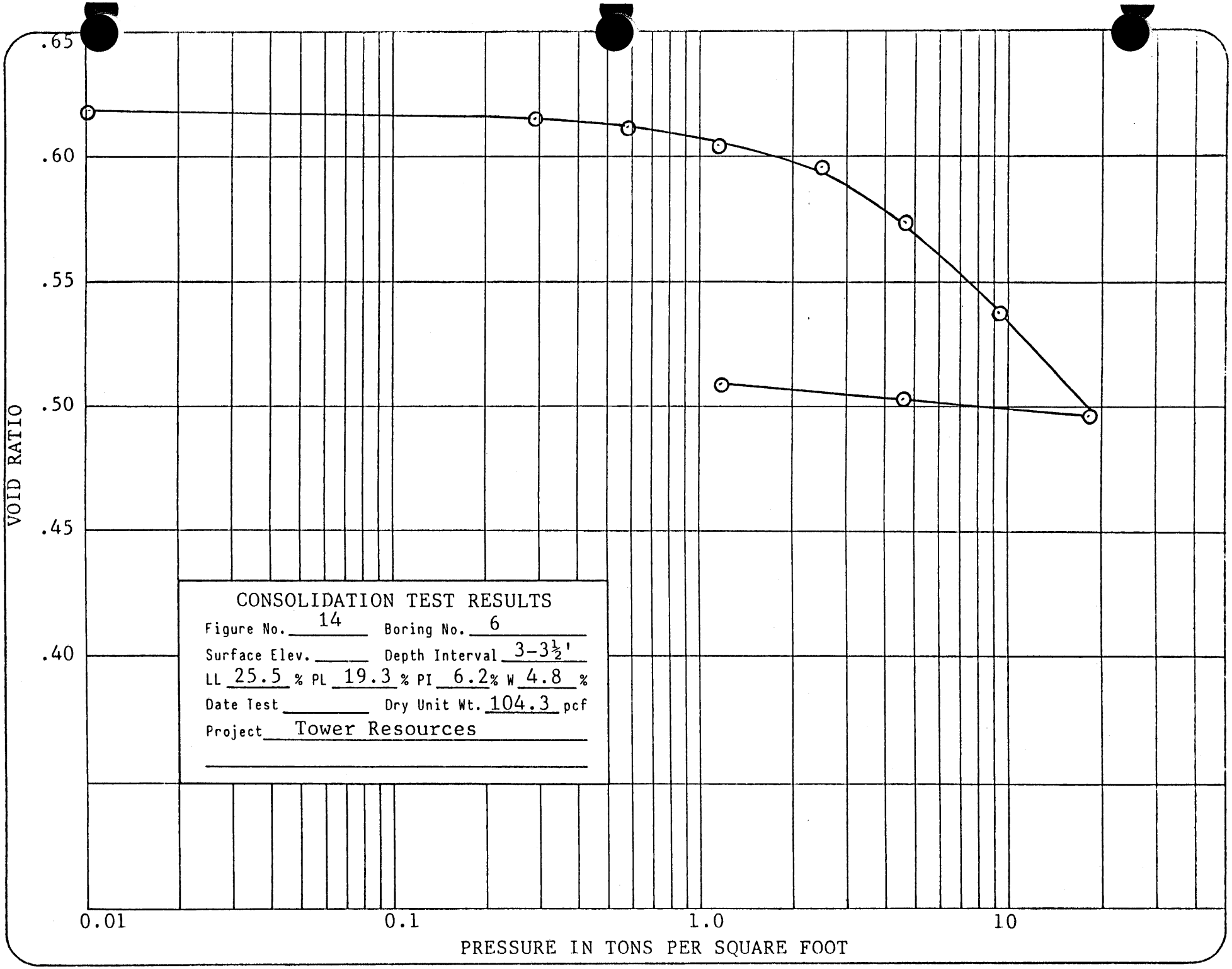

.70
.65
.60
.55
.50
.45
.40
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 9
Boring No. 4
Surface Elev.
Depth Interval 3-4½'
LL 21.7 % PL 20.1 % PI 1.6 % W 5.3 %
Date Test
Dry Unit Wt. 101.7 pcf
Project Tower Resources

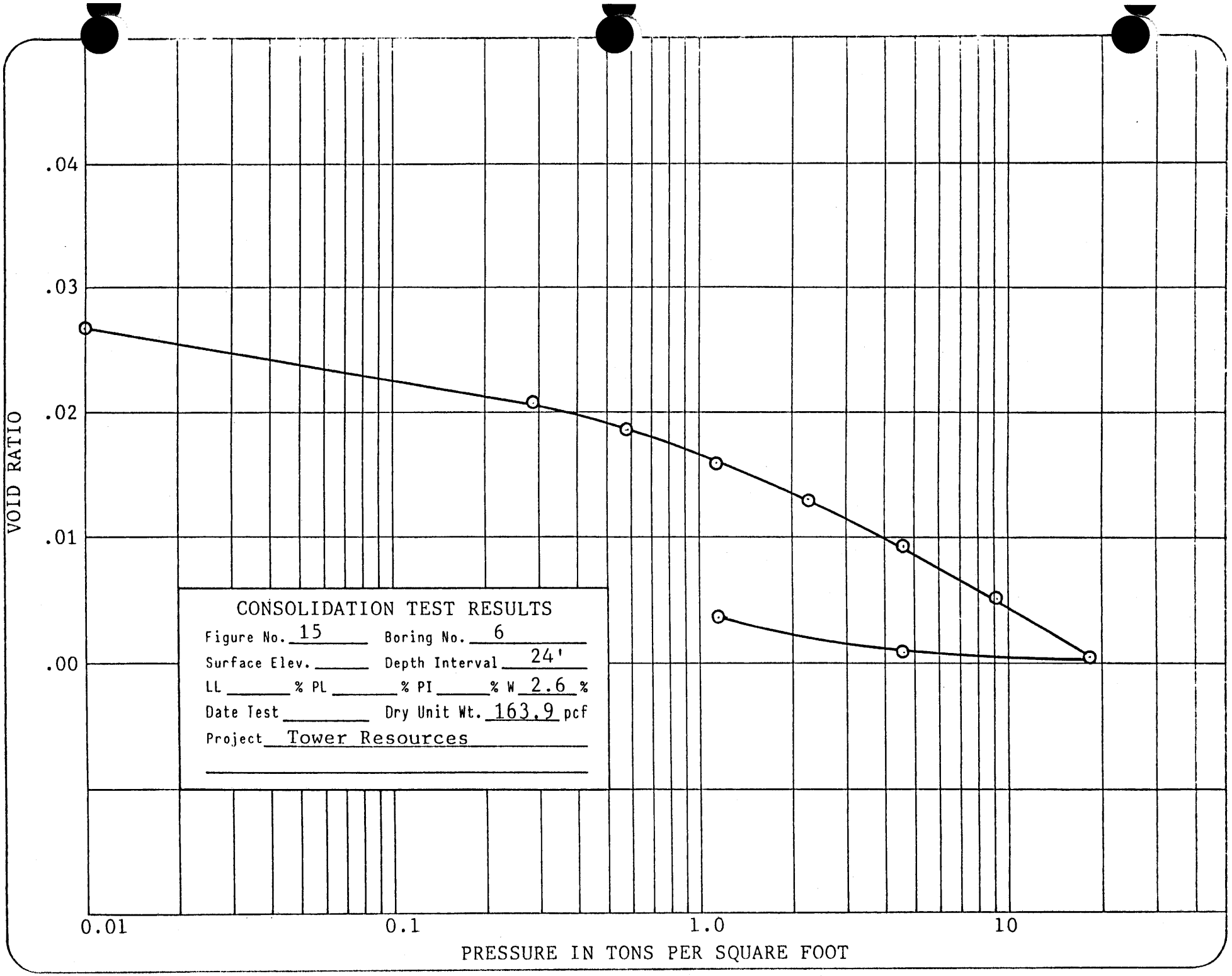

.70
.65
.60
.55
.50
.45
.40
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 10 Boring No. 4
Surface Elev. _____ Depth Interval 6-7½'
LL 20.3 % PL 18.5 % PI 1.8 % W 5.0 %
Date Test _____ Dry Unit Wt. 101.6 pcf
Project Tower Resources

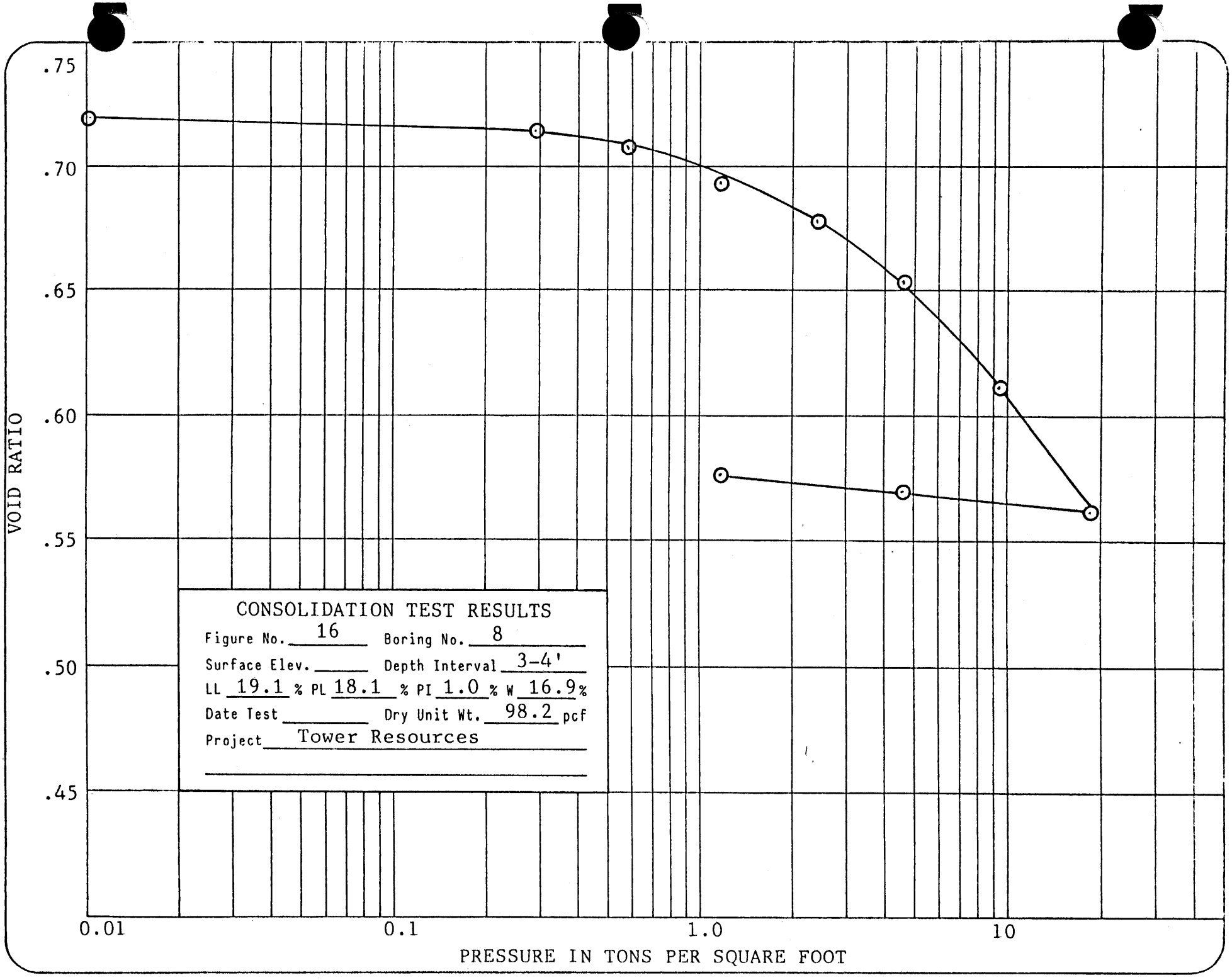

.75
.70
.65
.60
.55
.50
.45
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 11 Boring No. 4
Surface Elev. _____ Depth Interval 9-10½'
LL 26.5 % PL 18.2 % PI 8.3% W 5.9 %
Date Test _____ Dry Unit Wt. 99.1 pcf
Tower Resources

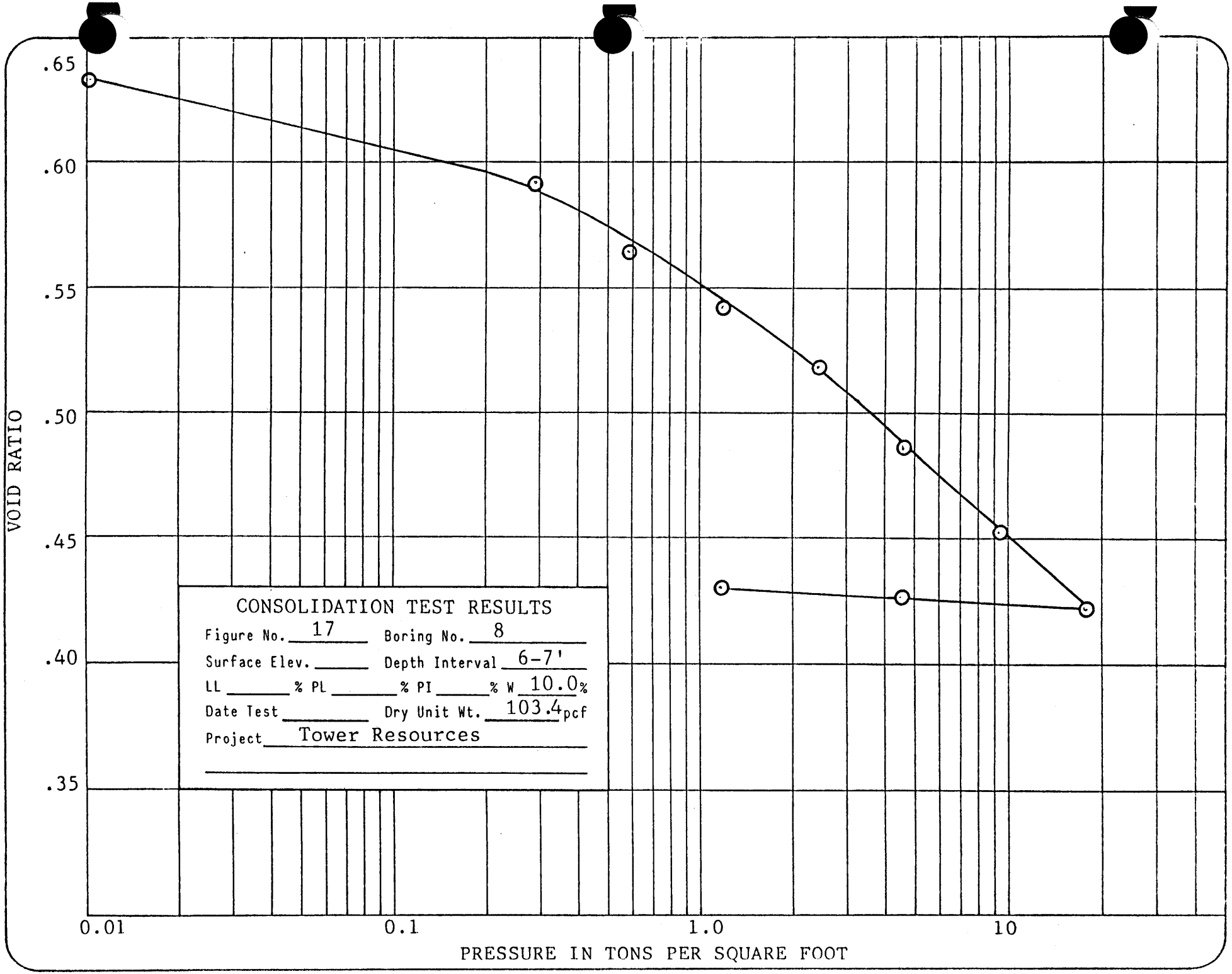

.80
.75
.70
.65
.60
.55
.50
.45
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 12 Boring No. 4
Surface Elev. _____ Depth Interval 12-13½'
LL 28.7 % PL 18.3 % PI 10.4% W 8.8 %
Date Test _____ Dry Unit Wt. 96.0 pcf
Project Tower Resources


VOID RATIO
.025
.020
.015
.010
.005
.000
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 13
Boring No. 5
Surface Elev.
Depth Interval 19'
LL % PL % PI % W 2.6 %
Date Test
Dry Unit Wt. 165.1 pcf
Project Tower Resources


.65
.60
.55
.50
.45
.40
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 14 Boring No. 6
Surface Elev. _____ Depth Interval 3-3½'
LL 25.5 % PL 19.3 % PI 6.2% W 4.8 %
Date Test _____ Dry Unit Wt. 104.3 pcf
Project Tower Resources


.04
.03
.02
.01
.00
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 15
Boring No. 6
Surface Elev. _____
Depth Interval 24'
LL _____ % PL _____ % PI _____ % W 2.6 %
Date Test _____
Dry Unit Wt. 163.9 pcf
Project Tower Resources


.75
.70
.65
.60
.55
.50
.45
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 16 Boring No. 8
Surface Elev. _____ Depth Interval 3-4'
LL 19.1 % PL 18.1 % PI 1.0 % W 16.9%
Date Test _____ Dry Unit Wt. 98.2 pcf
Project Tower Resources


.65
.60
.55
.50
.45
.40
.35
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 17
Boring No. 8
Surface Elev. _____
Depth Interval 6-7'
LL _____ % PL _____ % PI _____ % W 10.0%
Date Test _____
Dry Unit Wt. 103.4pcf
Project Tower Resources

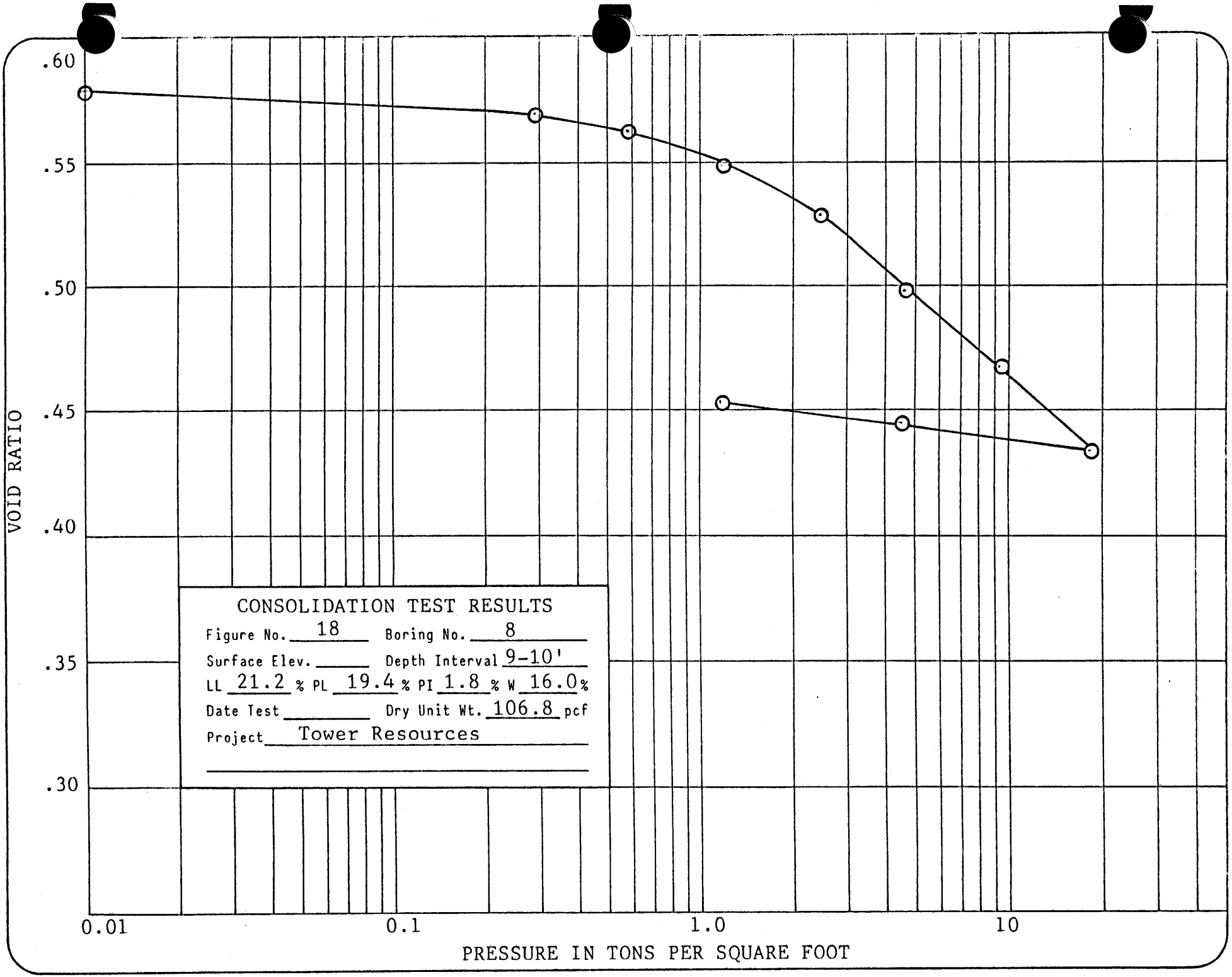

.60
.55
.50
.45
.40
.35
.30
VOID RATIO
0.01
0.1
1.0
10
PRESSURE IN TONS PER SQUARE FOOT
CONSOLIDATION TEST RESULTS
Figure No. 18 Boring No. 8
Surface Elev. Depth Interval 9-10'
LL 21.2 % PL 19.4 % PI 1.8 % W 16.0 %
Date Test Dry Unit Wt. 106.8 pcf
Project Tower Resources

TABLE NO. 1 SUMMARY OF TEST DATA

PROJECT Tower Resources FEATURE Foundations LOCATION Helper, Utah

HOLE NO.	DEPTH BELOW GROUND SURFACE	STANDARD PENETRATION BLOWS PER FOOT	IN-PLACE			UNCONFINED COMPRESSIVE STRENGTH LB/FT^2	FRICTION ANGLE ϕ	CONSISTENCY LIMITS			MECHANICAL ANALYSIS			UNIFIED SOIL CLASSIFICATION SYSTEM
			UNIT WEIGHT LB/FT^3	MOISTURE PERCENT	VOID RATIO			L.L. %	P.L. %	P.I. %	% GRAVEL	% SAND	% SILT & CLAY	
1	9-10½'	shelby	100.9	12.9				21.1	18.8	2.3				ML
	12-13'	shelby						NON-PLASTIC			4.7	39.6	55.7	ML
	15-16'	shelby						21.3	19.8	1.5				ML
	20-21'	shelby						20.9	16.7	3.3				ML
	25-26'	shelby						20.2	19.0	1.2				ML
2	12-13'	shelby	87.8	14.3				23.8	22.1	1.7				ML
4	3-4½'	shelby	101.7	5.3				21.7	20.1	1.6				ML
	6-7½'	shelby	101.6	5.0				20.3	18.5	1.8				ML
	9-10'	shelby	99.1	5.9				26.5	18.2	8.3				CL-1
	12-13'	shelby	96.0	8.8				28.7	18.3	10.4				CL-1
	15-15½'	shelby						32.6	19.1	13.5				CL-1
5	19'	core	165.1	2.6										
6	3-3½'	shelby	104.3	4.8				25.5	19.3	6.2				CL-ML
	6-7½'	46	100.7	10.1				23.9	19.9	4.0				CL-ML

TABLE NO. 1 SUMMARY OF TEST DATA

PROJECT Tower Resources FEATURE Foundations LOCATION Helper, Utah

HOLE NO.	DEPTH BELOW GROUND SURFACE	STANDARD PENETRATION BLOWS PER FOOT	IN-PLACE			UNCONFINED COMPRESSIVE STRENGTH LB/FT^2	FRICTION ANGLE ϕ	CONSISTENCY LIMITS			MECHANICAL ANALYSIS			UNIFIED SOIL CLASSIFICATION SYSTEM
			UNIT WEIGHT LB/FT^3	MOISTURE PERCENT	VOID RATIO			L.L. %	P.L. %	P.I. %	% GRAVEL	% SAND	% SILT & CLAY	
6	9-10½'	80						27.0	20.1	6.9				CL-ML
	12-13½'	90	108.3	14.5				21.9	17.8	4.1				CL-ML
	24'	core	163.9	2.6										
8	3-4'	shelby	98.2	16.9				19.1	18.1	1.0				ML
	6-7'	shelby	103.4	10.0				NON-PLASTIC			6.0	38.4	55.6	ML
	9-10'	shelby	106.8	16.0				21.2	19.4	1.8				ML

ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

December 31, 1981

Received
JAN 04 1982
Tower Resources Inc.

Tower Resources, Inc.
P.O. Box 1027
Price, UT 84501

ATTN: Mike Glasson

Gentlemen:

In accordance with your request, we have examined the depth of topsoil in the area where the proposed coal handling facilities will be located near Helper, Utah. The soil profile in this area is poorly developed and the depth of the topsoil is very thin. The depth of topsoil has been determined for Test Holes 1 through 8, as shown on the attached figure.

The approximate depth of the topsoil for Test Holes 4 through 8 are tabulated below as follows:

Hole No.	Depth of Topsoil (Inches)
4	4
5	3
6	3
7	3
8	3

Refuse from a coal washing operation has been deposited in the area where Test Holes 1 and 2 are located, and no topsoil exists in this area. Test Hole 3 is located along the tracks where coal has been deposited for shipping purposes during past periods of time. Approximately 2 feet of fine coal exists in this area, and no topsoil is in evidence.

The topsoil in the vicinity of Test Holes 4 through 8 is generally a silty sand to sandy silt.

1435 WEST 820 NORTH, P. O. BOX 711, PROVO, UTAH 84603 TELEPHONE 374-5771

We anticipate moving into the area to complete the foundation investigation for the drill holes during the middle of next week. Please advise us if we can be further assistance to you on this project.

Yours truly,

ROLLINS, BROWN AND GUNNELL, INC.

Ralph L. Rollins

Ralph L. Rollins

lw

enc.

Existing 46 Kv

Power Line

O.S.M. Sed. Control Pond

Runoff Diversion Ditch

O.S.M. Sed. Control Pond

Truck dump #1

Crushing & Screening Building

#2

Future raw Coal Storage Pile (if needed)

Future Preparation Plant (if needed)

Future Refuse Storage Area

#4

#5

#6

#7

#8

137'

225'

109'

334'

60,000 T. Storage pile

#3

Truck Dump

Stacker

Existing Train Loadout

Hopper

Unit Train Loadout

Room for Future Expansion of Storage Pile & Stacker

Center of Sec. 33

South 1/4 corner Sec 33

A

B

C

D

SCALE

DESIGNED CHECKED

DRAWN DATE

APPROVED LICENSE NO.

ROLLINS, BROWN & GUNNELL, Inc.

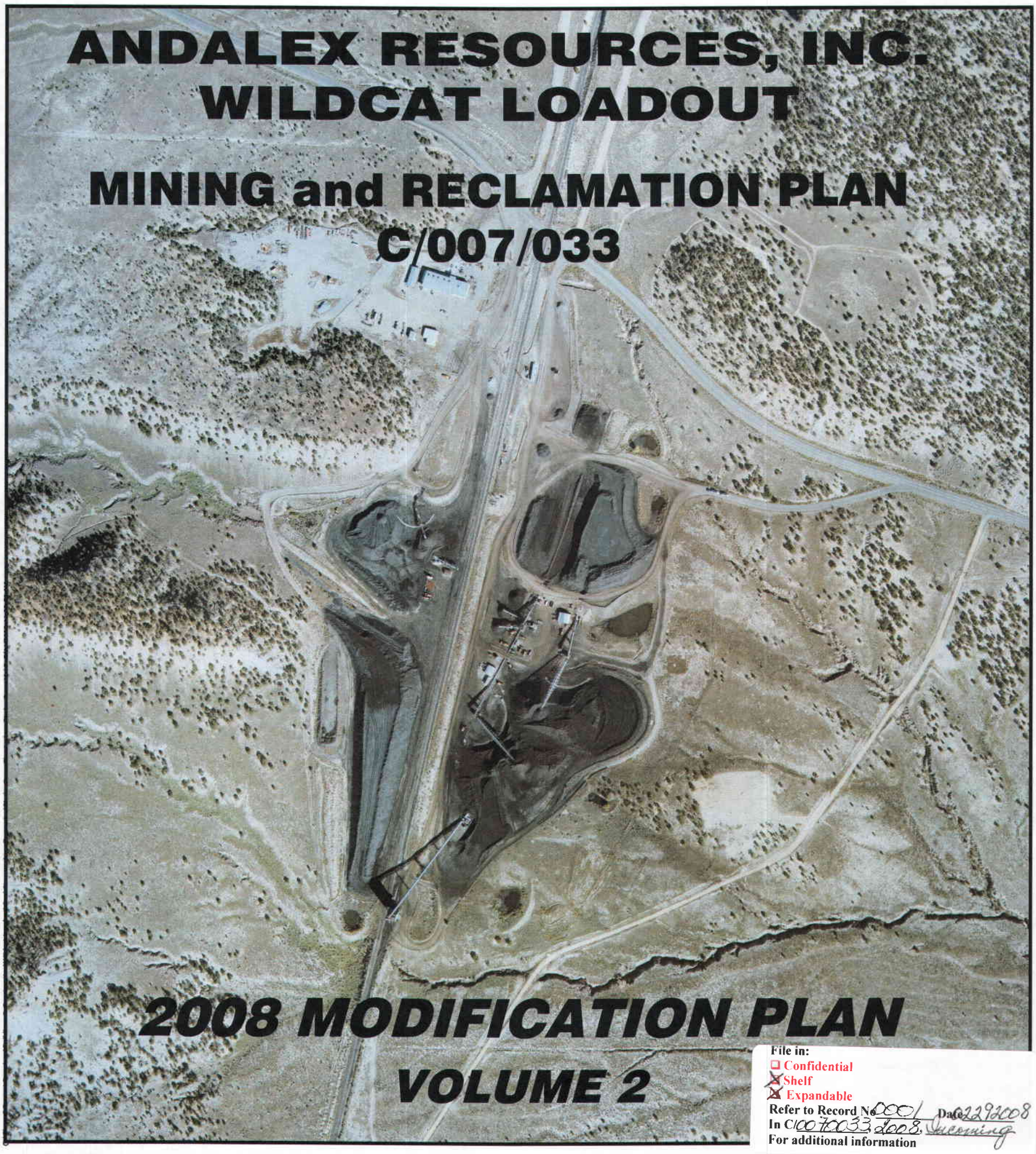
CONSULTING ENGINEERS

LOCATION OF TEST HOLES
TOWER RESOURCES COAL HANDLING FACILITIES

FIGURE NO. 1

ANDALEX RESOURCES, INC.
WILDCAT LOADOUT

MINING and RECLAMATION PLAN
C/007/033



2008 MODIFICATION PLAN
VOLUME 2

File in:
☐ Confidential
☒ Shelf
☒ Expandable
Refer to Record No 0001 Date 2/29/2008
In C/007/033, 2008, Incoming
For additional information

APPENDIX D

SOIL SURVEY

File in:
❑ Confidential
☒ Shelf
☒ Expandable
Refer to Record No 0001 Date 02292008
In C/00700331, 2008, Incoming
For additional information

RECEIVED
APR 29 1988
ANDALEX RESOURCES, INC.

United States Department of Agriculture
Soil Conservation Service
P. O. Box 11350
Salt Lake City, UT 84147

April 27, 1988

Mr. Michael W. Glasson
Senior Geologist
Western Operations
Andalex Resources, Inc.
P. O. Box 902
Price, Utah 84501

Dear Mr. Glasson:

We have completed our review of the project area, Wildcat Loadout Facility (Township 13 South, Range 9 East, Section 33), described in your letter to George Cook dated March 29, 1988.

According to the field review the project area does not contain any Important Farmland.

The completed Form AD-1006 is enclosed. If I can be of further assistance to you please contact me at the address above or on (801) 524-5064.

Sincerely,

Ferris Allgood

FERRIS P. ALLGOOD
State Soil Scientist

Enclosure

cc: w/o Enclosure
Keith Beardall, DC, SCS, Price, Utah

RECEIVED
FEB 29 2008
DIV. OF OIL, GAS & MINING

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

(To be completed by Federal Agency)	Date Of Land Evaluation Request: March 29, 1988
Name Of Project: Wildcat Loadout Facility (Township 13 South, Range 9 East, Section 33)	Federal Agency Involved
Proposed Land Use	County And State
PART II (To be completed by SCS)	Date Request Received By SCS

Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply – do not complete additional parts of this form).	Yes ☐	No ☒	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction: Acres: %		Amount Of Farmland As Defined in FPPA: Acres: %	
Name Of Land Evaluation System Used: Soil Survey	Name Of Local Site Assessment System		Date Land Evaluation Returned By SCS: April 27, 1988	

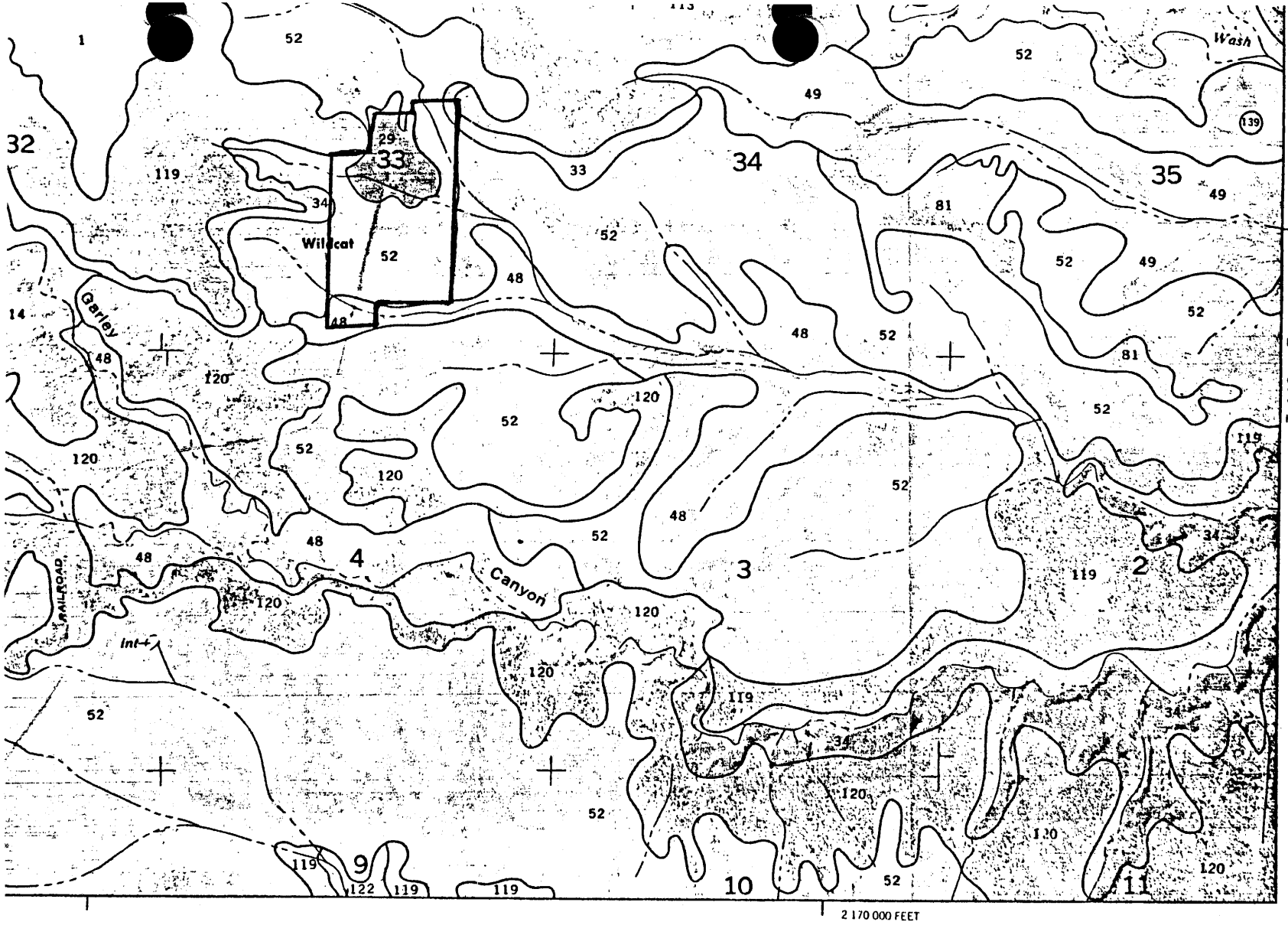
PART III (To be completed by Federal Agency)	Alternative Site Rating: Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site				
PART IV (To be completed by SCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V (To be completed by SCS) Land Evaluation Criterion Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)				

PART VI (To be completed by Federal Agency) Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160				
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)	100				
Total Site Assessment (From Part VI above or a local site assessment)	160				
TOTAL POINTS (Total of above 2 lines)	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

No Important Farmland determination. Area involved does not qualify for any of the categories for Important Farmland (prime, unique, or state-wide importance). Primary reason this area does not qualify for important farmland is because there is no irrigation water.



Wildcat Loadout

T13S R9E Section 33

29 Dempsey mine
48 Navendad loams, 1-8% slopes
52 Hernandez family, 3-8% slopes

March 25, 1982

Mr. Michael W. Glasson
Senior Geologist
Tower Resources, Inc.
P.O. Box 1027
Price, Utah 84501

Dear Mr. Glasson:

Attached is a mapping unit description of the soils of the proposed right-of-way area. It is located in section T.13S., R.9E., at the coal loading site at the Utah Railroad and the Gordon Creek road. This mapping unit description includes a soil profile description, topographic information and some other characteristics of the soils in the area.

This soil is rated good for use as topsoil to a depth of 60 inches or more.

The A horizon (upper 9 inches) of the soil is slightly higher in organic matter and lower in carbonate content. If sufficient quantity of this soil is available, it would be slightly better for topsoil than the material below this depth.

The north part of the area has small patches with 2 to 8 inches of coal waste over the surface. This coal waste should be removed before the soil is stored for topsoil.

The thickness of topsoil to be applied to reclaim the area will depend on the amount of coal waste left on the surface. If all of this waste material is removed, a thin layer will be needed. If the waste material left is thick, more will be needed. If the soil material on the area is compacted ripping will help with revegetation of the area.

Rating and interpretation are made using U.S. Soil Conservation Service criteria and reference material.

Sincerely,

Earl Jensen

Earl Jensen
Soil Scientist - Retired

MAPPING UNIT DESCRIPTION

Series Classification: Fine-loamy, mixed, meric (Subgroup) Ustallic Calciorthids (Family)

Mapping Unit Name: Abra loam, 3 to 6 percent slopes

This Abra (Series Name) soil is very deep (1) (Depth) and well (2) (Drainage Class) drained. It occurs on alluvial fans (3) (Position) at elevations of 6,100 to 6,200 feet. This soil formed in alluvium derived mainly from sandstone and shale. The average annual precipitation is estimated to be 12 to 13 inches. Slopes are 3 to 6 percent and east facing. They are 100 to 200 feet (5) in length and concave - convix (6) in shape. Vegetation is dominantly Indian Ricegrass, Russian Thistle, Cheatgrass & big Sagebrush. In disturbed areas it is mostly Rochia and Russian Thistle. Included in mapping are small areas of a similar soil to Abra except lacking a Ca horizon. Also included is a small area of coal waste dumps. These are both located in the drainage area that dissects the area near the center.

In a typical profile the surface layer is pale brown, loam about 9 inches thick. The underlying layer is light yellowish brown and pale brown, loam about 46 inches thick. The next layer is pale brown, very fine sandy loam to a depth 60 inches or more.
(Texture)

Other Characteristics: a layer of carbonate is at a depth of 9 to 12 inches. Permeability is .6 to 2 inches per hour to a depth of 60 inches or more. Available water capacity is 1.7 to 2 inches per foot of soil. Organic matter content in the surface layer is about 1 percent. The estimated moist bulk density (1/3 bar) is 1.20 to 1.30 in the surface 9 inches and 1.30 to 1.40 below this depth. Effective rooting depth is about 60 inches. Surface runoff is slow and erosion hazard is slight under potential native revegetation and moderate (11) (Descriptive Value) if vegetation is removed and the soil is left bare. Erodibility is high (K value .46) (12) (low, moderate, high) and wind erodibility is moderate (L4) to a depth of 60 inches.
range, wildlife habitat, woodland, recreation, urban, others

A typical pedon of Abra loam was described near the center of the area. (Colors are for dry soil unless otherwise noted)

A11-- 0 to 1 inches; light brownish gray (10 YR 6/2) (Color Name) (Coord.) loam (Texture), very dark gray (10 YR 3/1) when moist; weak medium platy structure that parts to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 16 percent clay (estimated); moderately calcareous; moderately alkaline (pH 8.0) clear smooth boundary.

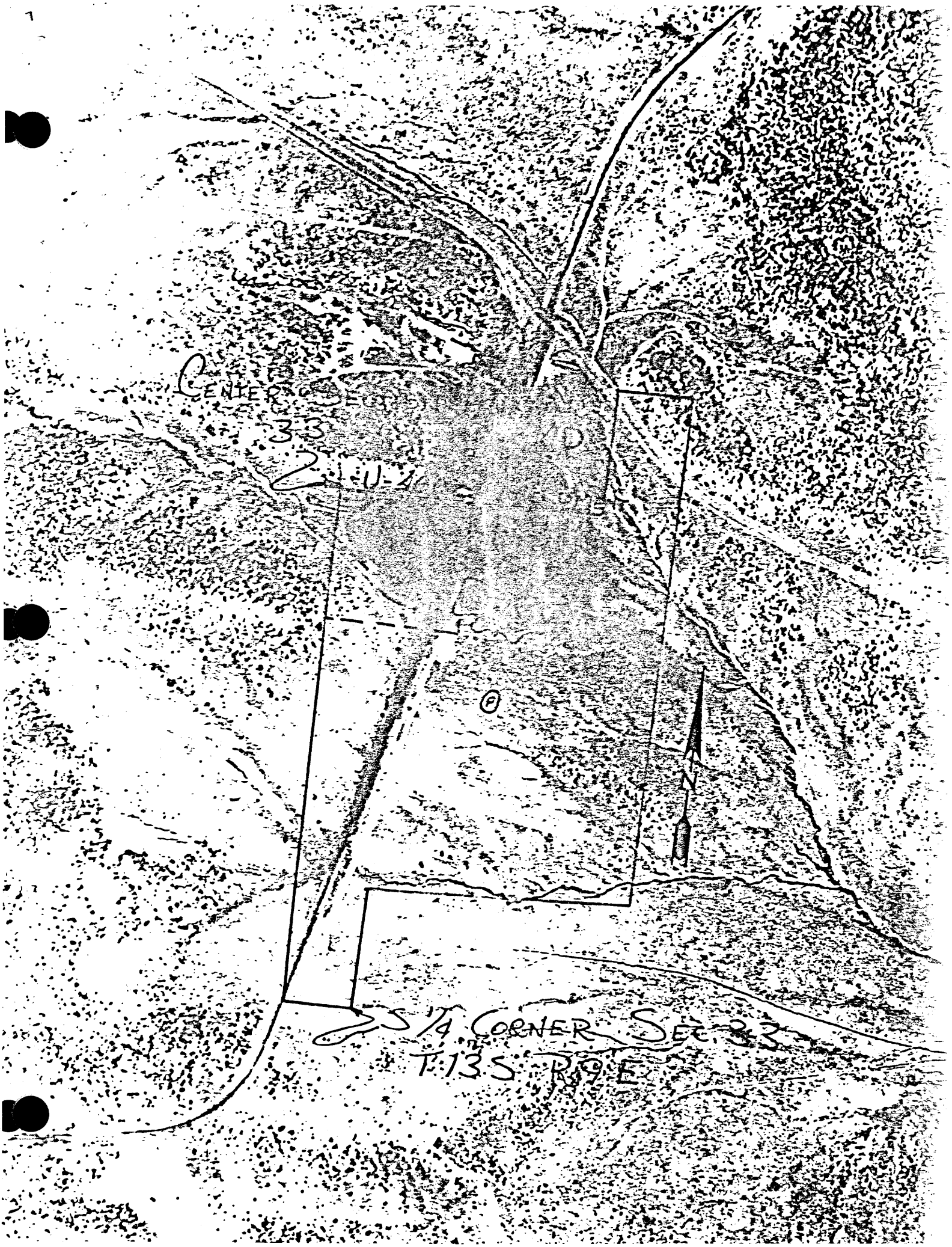
A12 -- (horizon) 1 to 9 inches; pale brown (10 YR 6/3) loam, brown (10 YR 5/3) when moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine, few (Abundance - Size) medium roots, 16 percent clay (estimated); moderately calcareous; moderately alkaline (pH 8.0); gradual smooth boundary.

C cal-- (horizon) 9 to 25 inches; light yellowish gray (10 YR 6/2) loam (Texture), grayish brown (10 YR 5/2) when moist; moderate coarse subangular blocky structure; that parts to moderate medium subangular; hard, firm, slightly sticky and slightly plastic; common very fine to medium, few coarse roots, common fine pores; 22 percent clay (estimated); moderately calcareous. Carbonater are massive and veined; strongly alkaline (pH 8.6); clear smooth boundary.

C ca 2 (horizon) 25 to 40 inches; pale brown (10 YR 6/3) loam, grayish brown (10 YR 5/2) when moist; strong coarse subangular blocky structure that parts to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; few very fine to medium roots, common fine and medium, few coarse pores; 30 percent clay (estimated); strongly calcareous, carbonates are massive and veined; strongly alkaline (pH 8.6); clear smooth boundary.

C ca 3 (horizon) 40 to 55 inches; pale brown (10 YR 6/3) loam (Texture), grayish brown (10 YR 5/2) when moist; strong coarse subangular blocky structure that parts to moderate medium subangular blocky; very hard, very firm, slightly sticky and slightly plastic; few very fine roots; common fine and medium, few coarse pores; 20 percent clay (estimated); strongly calcareous, carbonates are massive and fine modular; strongly alkaline (pH 8.8); clear smooth boundary.

C -- (horizon) 55 to 72 inches; pale brown (10 YR 6/3) very fine sandy loam, brown (10 YR 5/3) when moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots, moderately calcareous; strongly alkaline (pH 8.8).


CENTER SEC
33
U-4
P
N
S 1/4 CORNER SEC 33
T 13 S R 9 E

United States Department of Agriculture
Soil Conservation Service
350 North 400 East
Price, Utah 84501

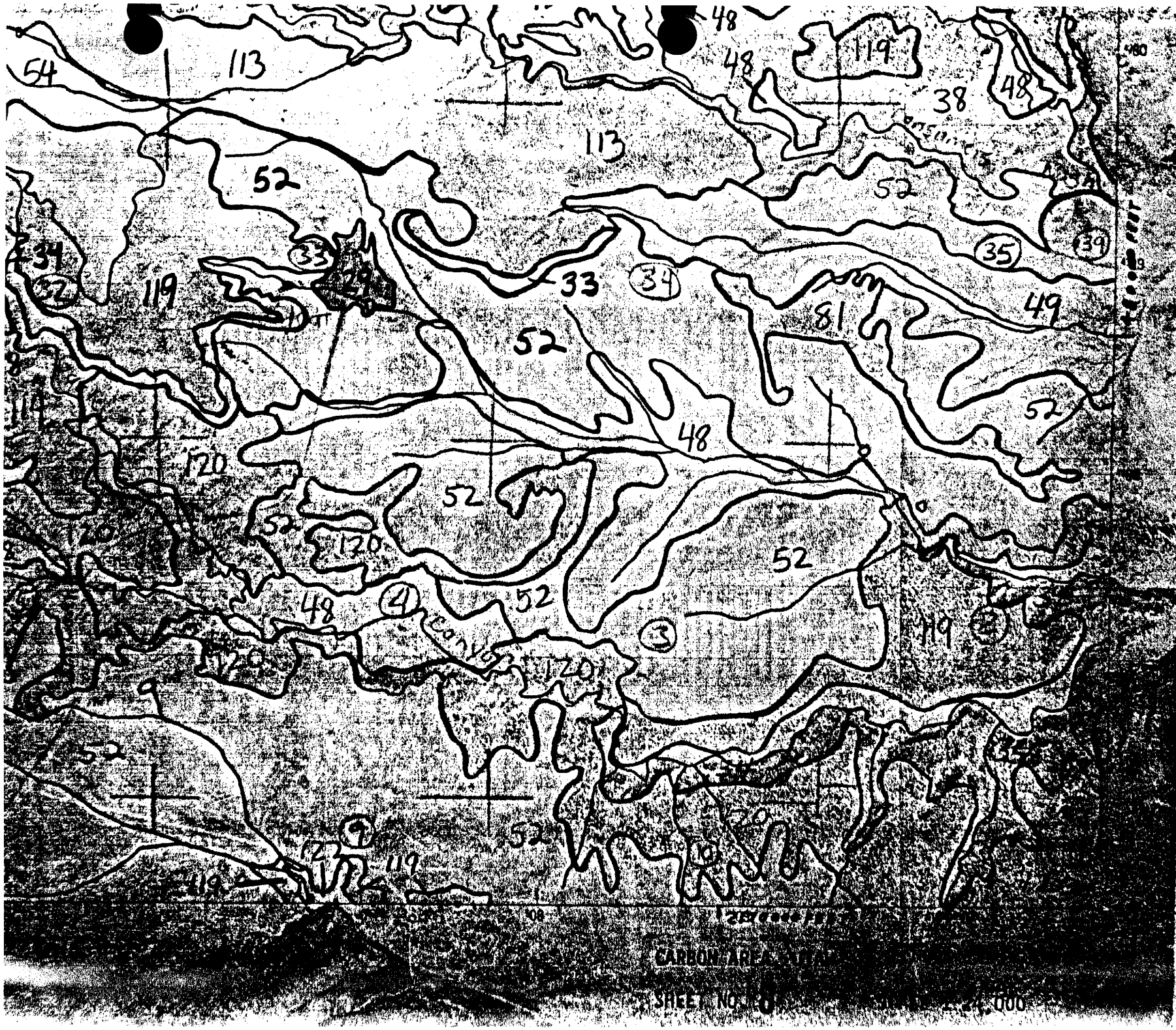
Mike Glasson
Andalex Inc.
P. O. Box 902
Price, Utah 84501

Please find attached the soil mapping unit descriptions and a map of the area near Wildcat Loadout. The loadout is unit 29. The pertinent units are outlined in red on the map.
The units are:
29--Dumps, mine
33--Gerst-Badland-Rubbleland complex, 15-50% slopes
34--Gerst-Badland-Rubbleland complex, 50-70% slopes
52--Hernandez family, 3-8% slopes
119--Travessilla sandy loam, 1-8% slopes.

Please feel free to contact me if you have any questions or need any additional information.

Carol D. Franks

Carol D. Franks
Soil Scientist
Price, Utah
637-0041


54
113
48
119
38
48
113
52
52
34
32
119
33
29
33
34
35
39
49
81
52
52
48
120
52
52
120
52
48
4
52
3
119
120
120
52
52
9
122
119
119
10
CARBON AREA
SHEET NO.

1.2
5

29--Dumps, mine

These are piles of waste rock and coal from coal mines. This material consists mostly of coal, hard shale, and sandstone fragments. The fragments are about .5 to 7 inches in size and angular in shape.

Most of this material is not vegetated at the present time. Some areas have a 6 or 8 inch surface layer of mixed soil and fragments. These areas have sparse vegetation of snowberry, Salina wildrye, rabbitbrush, and some annuals.

This map unit is in capability subclass VIIIs, nonirrigated and is not placed in a range site.

33--Gerst-Badland-Rubbleland complex, 15 to 50 percent slopes

This map unit is on mesa and fan terrace sideslopes located near Mohrland, northeast of Wellington, and northwest of East Carbon City. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 47 degrees F. and the average freeze-free period is 100 to 120 days.

This unit is 40 percent Gerst extremely stony loam, 15 to 50 percent slopes, 25 percent Badland; 20 percent Rubble land; and 15 percent other soils and miscellaneous areas. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit is about 12 percent Strych very stony loam and small areas of Rock outcrop.

The Gerst soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from sandstone and shale. Slopes are 100 to 200 feet in length, and concave-convex.

Typically the surface layer is light brownish gray extremely stony loam about 7 inches thick. The underlying material is gray and light brownish gray channery silt loam over weathered shale at a depth of 19 inches. Depth to

weathered shale ranges from 10 to 20 inches.

Permeability of the Gerst soil is moderately slow. Available water capacity is about 2 to 3 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3. Runoff is rapid and the hazard of water erosion is high.

Badland is steep or very steep, nearly barren areas of shale that are dissected by many intermittent drainage channels; some areas are interbedded with sandstone. Runoff is rapid to very high and geologic erosion is active.

Rubble land consists of areas covered by stones and boulders to the point that practically no soil is exposed. Rubble land supports only sparse vegetation except for lichens.

This unit is used for wildlife habitat and rangeland.

The potential vegetation on the Gerst soil is an overstory of pinyon and Utah juniper with a canopy of 15 percent. The understory vegetation is 40 percent grasses, 20 percent forbs, and 40 percent shrubs. Important plants are Salina wildrye, Indian ricegrass, birchleaf mountainmahogany, and Utah serviceberry.

The site index for Utah juniper and pinyon is 15 to 25. The average productivity is low. Average yields are 1 to 2 cords of wood per acre. The potential is very poor for post or Christmas tree production. Suitability of harvesting wood products on slopes 15 to 30 percent is fair.

Management practices that maintain or improve the rangeland vegetation include proper grazing use, planned grazing system and proper location of water developments. For critical erosion control, small areas may be mechanically treated and seeded. It is very hazardous or impractical to attempt range re-vegetation practices on large areas because of shallow soils and moderate water erosion. Plants that may be suitable for critical area seedings are plants native to the unit.

The Gerst soil is in capability subclass VIIs and is in the Upland Shallow Clay Loam (Utah Juniper-Pinyon) woodland site. The Badland and Rubble land are not placed in a range site.

34--Gerst-Badland-Rubbleland complex, 50 to 70 percent slopes

This map unit is on bench and mountain sideslopes. It is located north of Wattis and southeast of Mohrland. Slopes are 100 to 300 feet in length and concave-convex. The present vegetation is mainly Salina wildrye, Indian ricegrass, daisy, skeleton locoweed, shadscale, black sagebrush, and birchleaf mountainmahogony. Elevation is 6,200 to 7,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 47 degrees F, and the average freeze-free period is 100 to 120 days.

This unit is 45 percent Gerst extremely stony loam, 50 to 70 percent slopes, eroded; 25 percent Badland; 20 percent Rubble land; and 10 percent other soils. There is no definite pattern of soil occurrence on the landscape.

Included in this unit is 5 percent Strych very stony loam, and 5 percent Rock outcrop.

The Gerst soil is shallow and well drained. It formed in colluvium or residuum, derived dominantly from sandstone and shale.

Typically, the surface layer is light brownish gray extremely stony

loam about 7 inches thick. The underlying material is gray and light brownish gray channery silt loam over weathered shale at a depth of 19 inches. Depth to weathered shale ranges from 10 to 20 inches.

Permeability of the Gerst soil is moderately slow. Available water capacity is about 2 to 3.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is rapid and the hazard of water erosion is high.

Badland consists of steep and very steep nearly barren beds of actively eroding shale, shale interbedded with gypsum, and occasionally small areas of shale capped by sandstone.

Rubble land consists of areas covered by stones and boulders to the point that practically no soil is exposed. Rubble land supports very little vegetation.

This unit is used for wildlife habitat.

The potential vegetation on the Gerst soil is an overstory of pinyon and Utah juniper with a canopy of 15 percent. The understory vegetation is 40 percent grasses, 20 percent forbs, and 40 percent shrubs. Important plants are Salina wildrye, Indian ricegrass, birchleaf mountainmahogany, and Utah serviceberry.

The site index for Utah juniper and pinyon is 15 to 25. The average productivity is low. Average yields are 1 to 2 cords of wood per acre. The potential is very poor for post or Christmas tree production. Suitability of harvesting wood products is poor because of hazard of soil erosion.

The suitability for grazing use is poor. For critical erosion control, small areas may be mechanically treated and seeded. It is very hazardous or impractical to attempt range re-vegetation practices on large areas because of shallow soils and possible severe water erosion. Plants that may be suitable for critical area seedings are plants native to the unit.

This unit is in capability subclass VIIe, nonirrigated. The Gerst soil is in the Upland Very Steep Shallow Clay Loam (Utah Juniper-Pinyon) woodland site. The Badland and Rubble land are not placed in a range site.

52--Hernandez family, 3 to 8 percent slopes

This very deep, well drained soil is on fan terraces. It is located in Clark Valley, near Sunnyside and Helper. It formed in alluvium derived dominantly from sandstone and shale. Slopes are 300 to 400 feet in length and dominantly single but includes concave-convex. The present vegetation in most areas is mainly Wyoming big sagebrush, yellowbrush, galleta, Indian ricegrass and blue grama. Elevation is 5,600 to 6,500 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 47 to 49 degrees F. and the average freeze-free period is 110 to 135 days.

Typically the surface layer is brown loam 3 inches thick. The subsoil is brown loam 11 inches thick. The substratum to a depth of 60 inches or more is light brown or pink loam.

Included in this unit is about 10 percent Strych very stony loam, dry, on erratically located stony bars; 5 percent of a soil similar to Hernandez except moderately deep, on sideslopes; and 5 percent Haverdad loam, along the drainages.

Permeability of this Hernandez family soil is moderate. Available water capacity is about ~~8.5~~ 9 to ~~10~~ 10.5 inches. Water supplying capacity is 5.5

to 6.5 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is slow and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used mainly for rangeland and wildlife habitat. A few areas are used for irrigated crops.

The potential plant community on the Hernandez family soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Indian ricegrass, galleta, Wyoming big sagebrush, and winterfat. When a large percentage of the potential plant community has been removed, Utah juniper and pinyon may invade.

When the desirable forage plants are mostly depleted, brush management and rangeland seeding may be used to improve the rangeland vegetation.

Suitable brush management practices include prescribed burning, chemical spraying and mechanical treatment. Suitability for rangeland seeding is fair. The main limitation for rangeland seeding is low annual precipitation. Plants suitable for rangeland seeding include adapted native plants, Russian wildrye, crested wheatgrass, and prostrate kochia.

Under irrigation the management practices used to maintain or improve these areas include conservation cropping systems with alfalfa-grass, hay or pasture and small grain. Crop residues should be kept on the surface of the soil. Pasture management that incorporates use of roation grazing system is best.

Sprinkler irrigation systems gives the best erosion control and the ability to apply irrigation water evenly to the fields. Flood irrigation can also be used with system modifications to control erosion.

This map unit is in capability unit IIIe-2, irrigated and capability subclass VIe, nonirrigated. The Hernandez family soil is in the Semidesert Loam (Wyoming Big Sagebrush) range site.

119-Travessilla sandy loam, 1 to 8 percent slopes

This shallow well drained soil is on benches and mesas located between Helper and Haiwatha. It formed in residuum derived dominantly from sandstone. Slopes are 300 to 400 feet in length and concave-convex. The present vegetation in most areas is mainly pinyon, juniper, Salina wildrye, Indian ricegrass and birchleaf mountainmahogany. Elevation is 6,000 to 8,700 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 47 degrees F. and the average freeze-free period is 80 to 120 days.

Typically the surface layer is brown sandy loam about 3 inches thick. The upper 6 inches of the underlying material is brown loam. The lower part to a depth of 17 inches is light brown loam. Depth to sandstone ranges from 7 to 20 inches.

Included in this unit is about 5 percent Rock outcrop on ridges and 5 percent Chupedera fine sandy loam in concave areas.

Permeability of this Travessilla soil is moderately ~~rapid~~. Available water capacity is about ~~1~~ 2 to ~~2.5~~ 3 inches. Water supplying capacity is 3 to 4 inches. Effective rooting depth is 7 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is slow and the

hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for rangeland and wildlife habitat.

The potential vegetation on the Travessilla soil is an overstory of pinyon and Utah juniper with a canopy of 60 percent. The understory vegetation is 15 percent grasses, 10 percent forbs, and 75 percent shrubs. Important plants are pinyon, Utah juniper, birchleaf mountainmahogany, ~~and~~ Mexican cliffrose, and Saltbrush wildrye

The site index for pinyon and Utah juniper is 32. The average productivity is low. Average yields are 4 cords of wood per acre. The potential is poor for post or Christmas tree production.

Suitability of harvesting wood products on slopes 30 to 40 percent is poor because of steep slopes that will cause the equipment to move the soil downhill increasing the possibility of soil erosion.

Management practices that maintain or improve the rangeland vegetation include proper grazing use, planned grazing system and proper location of water developments. When pinyon and Utah juniper are thinned, desirable plant species present can be expected to increase for a short period of time. Then pinyon and Utah juniper can be expected to re-occupy the unit.

Suitability for rangeland seeding is very poor because of shallow soils. It is very hazardous or impractical to attempt range re-vegetation practices on large areas because of shallow soils. For critical erosion control, small areas may be mechanically treated and seeded.

This map unit is in capability subclass VIIs, nonirrigated and in the Upland Shallow Loam (Pinyon-Utah Juniper) woodland site.

Topsoil Pile Summary, Existing

Topsoil Pile A	11,877 ft.^{3}
Topsoil Pile B	97,622 ft.^{3}
Topsoil Pile C	158,694 ft.^{3}
Topsoil Pile D	29,454 ft.^{3}
Topsoil Pile E	122,176 ft.^{3}
Total	419,823 ft.^{3}

UTAH STATE UNIVERSITY · LOGAN, UTAH 84322

SOIL, PLANT and WATER
ANALYSIS LABORATORY
UMC 48

June 3, 1988

Andalex Resources, Inc.
Michael W. Glasson
P.O. Box 902
Price, UT 84501

Soil samples received May 5, 1988.

		Hydrometer %					mmhos /cm	%	%		%	ppm	%	mg/l
USU No.	ID	Sand	Silt	Clay	Texture	pH	ECe	SP	O.C.	SAR	T.N.	P	$CaCO_3$	B
88-1229	A	40	45	15	L	7.6	1.2	35.5	1.57	.3	.12	19	8.7	0.30
88-1230	B	31	40	29	CL	7.7	.8	39.9	1.02	.5	.10	7.9	10.6	0.51
88-1231	C	19	51	30	SiCL	8.1	.7	36.4	1.04	.4	.10	12	5.1	0.37
88-1232	C	18	54	28	SiCL	8.1	.6	37.1	1.34	.4	.10	12	8.3	0.27
88-1233	D	40	38	22	L	8.2	.6	34.6	1.21	.3	.09	13	4.0	0.26
88-1234	E	25	47	28	CL	8.1	.6	39.7	.93	.2	.09	5.1	9.4	0.34
88-1235	E	32	46	22	L	8.1	.6	35.7	.76	.2	.07	4.1	11.7	0.40

Texture: L = Loam
CL = Clay Loam
SiCL = Silty Clay Loam

wie

Please give me a call if you have any questions.
K. Topper

ANDALEX
RESOURCES, INC.
Tower Division

P.O. BOX 902
PRICE, UTAH 84501
PHONE (801) 637-5385
TELEX 381 530 ANDALEX PRIC

May 6, 1988

Utah State University
Logan, Utah 84322-4830

Attn.: Mr. Karl Topper, Soils Plant and Water Laboratory

Dear Mr. Topper:

Enclosed please find samples taken from Andalex Resources Topsoil Storage Piles located at the Wildcat Loadout Facility. The Division of Oil, Gas, and Mining is requiring these samples be tested for reclamation suitability. The tests which they require include:

pH
Ec
Saturation Percent
Texture
Organic C
SAR
Total N
Available P
Percent $CaCO_3$
Selenium
Boron

The samples are labeled A through E with two samples from Piles C and E. Please advise me by telephone at 637-5385 if pre-payment for this analysis is required.

Thank you very much.

Sincerely,

Michael W. Glasson
Senior Geologist
Western Division

MWG/as

Enclosures

cc: File

Revegetation Testing and Monitoring

Regarding Andalex Resource's vegetation test plots, the following measures will be taken in an effort to establish the viability of using this soil material as substitute to make up for the deficit which exists at the loadout. These methods will also be used in an attempt to establish good vegetative cover on the existing topsoil piles, with some options.

The test plots will be approximately 1600 square feet each. Their locations are shown on plate 1. This work will take place as late as possible in the fall of 1989, from early Setember to mid - October.

First of all the material will be ripped to a depth of 6 inches after which it will be mulched with alfalfa hay to the same depth. It is expected this will be accomplished with a tractor type tiller or disc. The hay which Andalex will use has been sampled by Mr. Carl Bott of the Utah State University extension office in Price. He observed it to be weed free. However, should weeds be observed within 30 days of mulching they will be treated with a contact hervicide with low residual and not a sterilant.

Areas will be left pitted to facilitate water entrapment. Areas will be fertilized this fall at the following per acre rate:

40 lbs	K_2O
60 lbs	P_2O_5
60 lbs	N (as Ureah; 1/2 this fall, 1/2 next spring)

A rangeland drill will be used to plant the seed mixture to a depth of 1/2 inch.

Andalex will observe rodent behavior inside the test areas and if they become a problem, measures will be taken to keep them out.

The monitoring program will be set up as outlined in the Division's guidelines. Four separate measurements will be taken on 20 separate and random 1/4 meter areas on each of the 4 test plots. The four measurments will be:

1. Ground cover by species. Appendix A in the guidelines different options for measuring such as ocular estimates.

2. Total cover.

3. Shrub Density. Each plot will have 4 each 20' x 2' transects picked randomly.

4. Production (Years 9 and 10 only).

The monitoring will begin the first year after planting. The first year will be strictly a qualitative in nature and percentages of cover and etcetera will be approximated. This information will be strictly for our own use. After the first year, quantitative monitoring will take over as described above. Quantitative monitoring for both the test plots and years 2, 3, 5, 9, and 10 in accordance with the Division's quidelines.

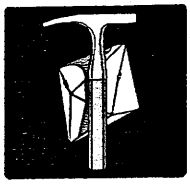
The success standards will be based on 90% of the reference area and 90% statistical adquacy with respect to cover, woody plant density and production (the reference area will be sampled concurrently).

Essentially the same methods and techniques will be used on the existing topsoil piles however different options may be applied such as broadcast seeding versus drilling, mulching versus not mulching, pitting versus smooth surfaces or weed controlling versus no weed controlling. Various combinations will be tried.

APPENDIX D
(SUPPLEMENT)

SOILS REPORT
JAMES NYENHUIS

SOIL SURVEY FOR THE TWELVE-ACRE EXPANSION AREA AT THE WILDCAT LOADOUT



INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

Prepared by

MT. NEBO SCIENTIFIC, INC.
330 East 400 South, Suite 6
Springville, Utah 84663
(801) 489-6937

James H. Nyenhuis
Certified Professional Soil Scientist
(ARCPACS #2753)

for

ANDALEX RESOURCES, INC
P.O. Box 902
Price, UT 84501

July 2003

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

TABLE OF CONTENTS

INTRODUCTION 1

METHODS 2

RESULTS 3

Map Unit A: Hernandez loam, 1 to 6% slopes 4
Hernandez Pedon WC1 Site and Profile Description 5
Hernandez Pedon WC2 Site and Profile Description 5
Hernandez Pedon WC3 Site and Profile Description 6
Hernandez Pedon WC6 Site and Profile Description 7
Hernandez Pedon WC7 Site and Profile Description 8
Hernandez Pedon WC10 Site and Profile Description 9
Hernandez Range of Characteristics 9
Hernandez Soil Suitability and Salvage Depth Recommendations 10
Initial One-Acre Study Area 10
Larger Eleven-Acre Study Area 11

Map Unit B: Haverdad loam, 2 to 8% slopes 11
Haverdad Pedon WC4 Site and Profile Description 12
Haverdad Pedon WC8 Site and Profile Description 12
Haverdad Range of Characteristics 14
Haverdad Soil Suitability and Salvage Depth Recommendations 14

Map Unit C: Strych Variant, shallow to moderately deep, 2 to 6% slopes 15
Strych Variant Pedon WC5 Site and Profile Description 16
Strych Variant Pedon WC9 Site and Profile Description 17
Strych Variant Range Characteristics 18
Strych Variant Soil Suitability and Salvage Depth Recommendation 18

Map Unit DL: Disturbed Land 19

REFERENCES 19

SOIL SURVEY MAP 20

LABORATORY DATA . . . . . Appendix

INCORPORATED

MAY 17 2005

Div. of Oil, Gas & Mining

INTRODUCTION

Andalex Resources needs to expand their coal storage area at the Wildcat Loadout facility located just south of Consumers Road about four miles west of Helper in Carbon County. The site is located in a portion of Section 33, T.14S., R.9E. as shown on the Standardville 7.5 minute USGS topographic quadrangle. A detailed Order 1-2 soil survey was conducted in March 2003 on approximately 12 acres of land immediately adjacent to the east of the current coal storage piles. A one acre site within the current Wildcat permit area but not part of the original to-be-affected disturbance area was previously mapped, sampled, and reported in April, 2003. The current report includes the one acre but expands to include a total of approximately 12 acres all located immediately adjacent to the east of the current coal piles.

Andalex wants to utilize the one acre site for coal storage immediately and the additional eleven acres at a later time. The identification and proper management of topsoil resources on the study area is essential for the success of future reclamation and the achievement of the post-disturbance land use. The information presented in this report is designed to aid in formulating a practical and successful reclamation plan.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

METHODS

Standard soil survey methods were used throughout the project. Andalex provided a site photo-map to Patrick Collins. Dr. Collins conducted field work at the site on March 5 and designated three locations as representative of the soil on the one acre study area. A backhoe pit was dug at each of the three sites. Dr. Collins examined the three soil profiles and sampled two of them, WC1 and WC2. Samples were subsequently delivered to Brigham Young University's soil testing laboratory for standard analysis as described in the "Guidelines for Management of Topsoil and Overburden" (State of Utah, 2002). Dr. Collins also investigated the extent of coal fines deposition on the one acre site by means of numerous spade holes dug on a grid transect basis.

The site was then visited on March 11 by Patrick Collins and Jim Nyenhuis, a Certified Professional Soil Scientist. Dr. Collins described his sampling rationale and Mr. Nyenhuis concurred that it was appropriate for the Hernandez soil. The next day, March 12, seven additional backhoe pits were sited and dug on the larger twelve acre study area. Ms. Priscilla Burton (UDOGM soil scientist and reclamation specialist) was present for the day and observed all ten backhoe pits and assisted in the description and sampling of several soil profiles. She observed all three pits on the primary one acre study area. Mr. Nyenhuis concluded the soils description and sampling of the larger area on the following day, March 13, 2003.

The twenty-three soil samples collected from the additional seven soil backhoe pits were delivered to Colorado State University's Soil Testing Laboratory for analysis. The following parameters

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

were analyzed: pH; electrical conductivity (EC); saturation percent; percent calcium carbonate equivalent; organic matter percent; texture (sand, silt, clay, and very fine sand as a part of total sand); meq/L of Ca, Mg, Na, and K; SAR; and AB-DTPA extractable nitrate nitrogen (NO3-N), P, K, Zn, Fe, Mn, and Cu.

RESULTS

Ten backhoe pits were dug in representative locations across the 12 acre study area (see "Soil Survey Map" included with this report). Soils were described at each of the pits, and eight of the ten pits were sampled for laboratory analysis. Sample sites WC1 and WC2 were sampled as part of the one acre study, and samples sites WC4, WC6, WC7, WC8, WC9, and WC10 were sampled as part of the larger 12 acre study. The soil laboratory data is attached to this report. Three soil map units were delineated across the 12 acre study area: (A) Hernandez loam, 1 to 6 percent slopes, (B) Haverdad loam, 2 to 8% slopes, and (C) Strych Variant, shallow to moderately deep, 2 to 6% slopes.

Average elevation of the study area is about 6,100 to 6,155 feet MSL. Average annual precipitation is about 10 to 12 inches (ustic-aridic soil moisture regime). Average annual air temperature is about 47 to 49 degrees F. (mesic soil temperature regime). The average freeze-free period is 110 to 135 days per year (Jansen and Borchert, 1988).

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

Map Unit A: Hernandez loam, 1 to 6% slopes

Hernandez loam was described and sampled at five representative locations (WC1, WC2, WC6, WC7, and WC10). Hernandez was also described but not sampled at WC3. Although there are some differences among the six sites, each soil classifies as the Hernandez series. The Hernandez family, Map Unit 52, was also mapped for the area by NRCS on Sheet 8 of its Soil Survey of Carbon Area, Utah (Jansen and Borchert, 1988).

Hernandez family is a very deep, well drained soil mapped on uplands in the general area. The soil is developing in local alluvium derived dominantly from sandstone and shale. Site vegetation includes Wyoming big sagebrush and mixed grasses. Based on NRCS data, Hernandez has moderate permeability, high available water capacity (9.0 to 10.5 inches), slow runoff, and water supplying capacity of 5.5 to 6.5 inches. Effective rooting depth is 60 inches or more, the organic matter content of the surface layer is generally 1 to 3 percent, and the hazard of wind and water erosion is moderate (Jansen and Borchert, 1988). The Range Site for Hernandez is Semidesert Loam (Wyoming Big Sagebrush).

Hernandez is classified as a "Fine-loamy, mixed, superactive, mesic Ustic Haplocalcid". Hernandez is an established soil series of moderate extent. The most recent NRCS official soil series description, dated October 2002, is on file at Mt. Nebo Scientific. Hernandez sites WC1, WC2, and WC3 were previously described in the one acre study area report, and are also included in the current report.

INCORPORATED
4
MAY 17 2006
Div. of Oil, Gas & Mining

Hernandez Pedon WC1 Site and Profile Description:

Map Unit A; 3% slope, east-southeast aspect; Wyoming big sagebrush and mixed grasses vegetation; local alluvium; fan uplands; no erosion; soil slightly moist to 8 inches; 3 inches of coal fines deposition from the adjacent Wildcat Loadout facility; sampled for laboratory characterization.

Coal Fines – 3 to 0 inches (3 inches thick)

A horizon – 0 to 3 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium granular structure; soft dry consistence, very friable moist consistence, slightly sticky and slightly plastic wet consistence; common coarse, medium and many fine and very fine roots to 13 inches; moderately effervescent, slightly alkaline (pH 7.7); gradual smooth boundary.

Bw (cambic) horizon – 3 to 13 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; strongly effervescent, slightly alkaline (pH 7.7); clear wavy boundary.

Bk (calcic) horizon – 13 to 23 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive structure; slightly hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; few coarse, medium, fine and very fine roots; violently effervescent, slightly alkaline (pH 7.8); gradual wavy boundary.

Ck horizon – 23 to 60 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; massive structure; very hard dry consistence, firm moist consistence, sticky and slightly plastic wet consistence; strongly effervescent, moderately alkaline (pH 8.2); did not hit bedrock.

Hernandez Pedon WC2 Site and Profile Description:

Map Unit A; 4% slope; east-southeast aspect; Wyoming big sagebrush and mixed grasses vegetation; local alluvium; fan uplands; no erosion; soil slightly moist to 3 inches; 3 inches of coal fines deposition from adjacent Wildcat Loadout facility; sampled for laboratory characterization.

Coal Fines – 3 to 0 inches (3 inches thick)

A horizon – 0 to 3 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; strong, medium platy structure (mechanically compacted); hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; few to common coarse and medium and many fine and very fine roots to 10 inches; strongly effervescent, moderately alkaline (pH 7.8); gradual smooth boundary.

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

Bw (cambic) horizon – 3 to 10 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium platy structure (mechanically compacted); hard dry consistence, firm moist consistence, slightly sticky and slightly plastic wet consistence; strongly effervescent, moderately alkaline (pH 7.8); clear wavy boundary.

Bk (calcic) horizon – 10 to 32 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive structure; extremely hard dry consistence; very firm moist consistence; sticky and slightly plastic wet consistence; few medium, fine, and very fine roots; violently effervescent, moderately alkaline (pH 7.8); gradual wavy boundary.

Ck horizon – 32 to 60 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; massive structure; very hard dry consistence, firm moist consistence, sticky and slightly plastic wet consistence; violently effervescent, strongly alkaline (pH 8.5); did not hit bedrock.

Hernandez Pedon WC3 Site and Profile Description:

Map Unit A; 3% slope' east-southeast aspect; Wyoming big sagebrush and mixed grasses vegetation; local alluvium; fan uplands; soil slightly moist to 9 inches; no erosion; 3 inches of coal fines deposition from adjacent wildcat Loadout facility; not sampled for laboratory characterization.

Coal Fines – 3 to 0 inches (3 inches thick).

A horizon – 0 to 3 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium granular structure; soft dry consistence, very friable moist consistence, slightly sticky and slightly plastic wet consistence; common medium, fine, and very fine and few coarse roots to 9 inches; strongly effervescent; gradual smooth boundary.

Bw horizon – 3 to 9 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; strongly effervescent; clear wavy boundary.

Bk1 horizon – 9 to 18 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive structure parting to moderate medium subangular blocky; slightly hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; commmon fine and very fine and few coarse and medium roots; strongly effervescent; gradual wavy boundary.

Bk2 horizon – 18 to 32 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3)

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

moist; massive structure; very hard dry consistence, firm moist consistence, sticky and slightly plastic wet consistence; few medium, fine, and very fine roots; violently effervescent; gradual wavy boundary.

Ck horizon – 32 to 52 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive structure; very hard dry consistence, very firm moist consistence, sticky and slightly plastic wet consistence; violently effervescent; gradual wavy boundary.

C horizon – 52 to 64 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; massive structure; hard dry consistence, firm moist consistence, slightly sticky and slightly plastic wet consistence; did not hit bedrock.

Hernandez Pedon WC6 Site and Profile Description:

Map Unit A; 4% slope; east aspect; mixed grasses, dead Wyoming big sagebrush vegetation; local alluvium; fan uplands; no erosion; soil slightly moist to 18 inches at time of sampling, 3-12-03; 3 inches of coal fines deposition from adjacent wildcat loadout facility; sampled for laboratory characterization.

Coal fines – 3 to 0 inches (3 inches thick)

A horizon- 0 to 3.5 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; weak medium granular structure; soft dry consistence, very friable moist , slightly sticky and slightly plastic wet consistence; common medium, fine, very fine, and few coarse roots to 13 inches; moderately effervescent, moderately alkaline (pH 7.9); gradual smooth boundary.

Bw horizon – 3.5 to 13 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/40 moist; moderate medium subangular blocky structure; slightly hard dry consistence, friable moist consistence, sticky and slightly plastic wet consistence; moderately effervescent, slightly alkaline (pH 7.8); gradual wavy boundary.

Bk horizon – 13 to 25 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; massive structure; hard dry consistence, friable moist consistence; slightly sticky and slightly plastic wet consistence; common fine and very fine, and few coarse and medium roots 13 to 18 inches, few coarse, medium, fine, and very fine roots 18 to 25 inches; strongly effervescent, moderately alkaline (pH 8.0); gradual wavy boundary.

Ck horizon – 25 to 38 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; massive structure; very hard to extremely hard dry consistence; firm moist consistence, sticky and slightly plastic wet consistence; strongly effervescent, moderately alkaline (pH 8.4); gradual wavy boundary.

C horizon – 38 to 64 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

brown (10YR 4/4) moist; massive structure; hard dry consistence, firm moist consistence, sticky and slightly plastic wet consistence; moderately effervescent, strongly alkaline (pH 8.5); did not hit bedrock.

Hernandez Pedon WC7 Site and Profile Description:

Map Unit A; 4% slope; east aspect; Wyoming big sagebrush and mixed grasses vegetation; local alluvium; fan uplands; no erosion; soil slightly moist to10 inches at time of sampling, 3-13-03; 2 inches of coal fines deposition from adjacent Wildcat Loadout facility; sampled for laboratory characterization.

Coal Fines – 2 to 0 inches (2 inches thick)

A horizon – 0 to 3 inches; brown (10YR 5/3) loam with some areas with coal fines mixed in, brown (10YR 4/3) moist; weak medium granular structure; soft dry consistence, very friable moist consistence, sticky and slightly plastic wet consistence; many fine and very fine, and few coarse and medium roots to 10 inches; moderately effervescent, moderately alkaline (pH 7.9); gradual smooth boundary.

Bw horizon – 3 to 10 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; moderate to strongly effervescent, slightly alkaline (pH 7.8); gradual wavy boundary.

Bk1 horizon – 10 to 22 inches; very pale brown (10YR 7/3) clay loam, brown (10YR 5/3) moist; massive structure; hard-very hard dry consistence, firm moist consistence, sticky and slightly plastic wet consistence; common fine and very fine, and few medium and coarse roots 10 to 22 inches; strongly effervescent, moderately alkaline (pH 7.9); common krotovinas from 10 to 38 inches; gradual wavy boundary.

Bk2 horizon – 22 to 38 inches; very pale brown (10YR 7/3) clay loam, brown (10YR 5/3) moist; massive structure; extremely hard dry consistence, very firm moist consistence, slightly sticky and nonplastic wet consistence; few fine and very fine roots 22 to 38 inches; violently effervescent, moderately alkaline (pH 8.3); gradual wavy boundary.

C horizon – 38 to 56 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; massive structure; hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; strongly effervescent, strongly alkaline (pH 8.6); did not hit bedrock.

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

Hernandez Pedon WC10 Site and Profile Description:

Map Unit A; 6% slope; east aspect; rabbitbrush and mixed grasses vegetation; local alluvium; fan uplands; no erosion; soil slightly moist to 12 inches at time of sampling, 3-13-03; 1.5 inches of coal fines deposition from the adjacent Wildcat Loadout facility; sampled for laboratory characterization; sample site is just outside of the 12 acre study area but in an area for a future sedimentation pond.

Coal Fines – 1.5 to 0 inches (1.5 inches thick)

A horizon - 0 to 3 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) loam, weak medium granular structure; soft dry consistence, very friable moist consistence, slightly sticky and slightly plastic wet consistence; common few and very few, and few coarse and medium roots to 12 inches; strongly effervescent, moderately alkaline (pH 8.0); gradual smooth boundary.

Bw horizon – 3 to 12 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard dry consistence; friable moist consistence, slightly sticky and slightly plastic wet consistence; strongly effervescent, moderately alkaline (pH 8.0); gradual wavy boundary.

Bky horizon – 12 to 30 inches; very pale brown (10YR 7/4) clay loam, light yellowish brown (10YR 6/4) moist; massive structure; very hard dry consistence, firm moist consistence, sticky and plastic wet consistence; few medium, fine, and very fine roots 12 to 24 inches; violently effervescent, moderately alkaline (pH 8.0); gradual wavy boundary.

C horizon – 30 to 62 inches; light yellowish brown (10YR 6/4) loam/sandy loam, pale brown (10YR 6/3) moist; massive structure; hard dry consistence, firm moist consistence, slightly sticky and slightly plastic wet consistence; strongly effervescent, moderately alkaline (pH 8.0); did not hit bedrock.

Hernandez Range of Characteristics:

The described and sampled pedons WC-1, WC-2, WC-3, WC-6, WC-7, and WC-10 are typical of Hernandez, and are within the range of characteristics for the Hernandez official soil series description (NRCS, October 2002).

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

Hernandez Soil Suitability and Salvage Depth Recommendation:

Initial One-Acre Study Area

Based on an evaluation of the field and laboratory data (see Appendix), the Hernandez soil is entirely suitable throughout its profile depth to 54 inches or more. Soil textures are good with loam dominating the upper profile, and loam to clay loam in the lower profile. Soil salinity is low with electrical conductivity (EC) values less than 1 in the upper profile and 2 to 3 in the lower profile. Sodium Adsorption Ratio (SAR) is low throughout the profile with values less than 1 for all samples except the 32 to 54 inch depth interval of WC-2 (SAR=6.5). Soil reaction (pH) is slightly to moderately alkaline with values in the high 7's and low 8's (range of pH 7.7 to 8.5). Calcium carbonate content ranges from 9.7 to 18.7 percent and averages 13.9 percent across all samples. Organic matter content is somewhat high in the upper profile (2.8 to 3.6 percent) and generally low in the lower profile (0.5 to 0.9 percent).

If needed, the entire profile to 54 inches or more could be salvaged for use in reclamation activities. The better soil material is in the approximate upper 24 inches. Soil texture is loam and organic matter content is somewhat high in this upper 2 feet. EC and SAR values are low. Soil texture is good and the soil material can be easily handled. If a more limited amount of soil material is needed, the upper 24 inches can be salvaged as Topsoil. Additional underlying material could be salvaged, as needed, for use as Subsoil.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

Larger Eleven-Acre Study Area

Soil description and sample sites WC6, WC7, and WC10 were evaluated for suitability and salvage depth recommendation for the remaining 11 acre study area. WC10 is located in a proposed sedimentation pond area just outside the 11 acre study area but was included in the evaluation of Hernandez. The upper 25 inches of WC6 is good rated. The depth between 25 and 38 inches is good rated except both EC (5.5) and SAR (9.1) are fair rated. The lower zone between 38 and 64 inches has poor EC (10.1) and unacceptable SAR (16.7). The upper 38 inches of WC7 is good rated; between 38 and 56 inches is good rated except for fair rated SAR (6.8). The upper 12 inches of WC10 is good rated; between 12 and 30 inches has fair to poor EC (8.5) and fair SAR (8.4). Both EC (12) and SAR (10.4) are poor rated for the zone between 30 and 62 inches. For laboratory reports, refer to the Appendix of this document.

Given that WC10 is located outside the 11 acre study area, it is recommended that the upper 38 inches of Map Unit A be salvaged as Topsoil. The underlying material has good to poor rated EC and fair to unacceptable SAR. If additional material is needed and can be somewhat mixed during salvage, it is possible to salvage this lower material between 38 and about 62 inches as Subsoil.

Map Unit B: Haverdad loam, 2 to 8% slopes

Haverdad loam was described and sampled at two representative locations, WC4 and WC8. Haverdad loam was previously mapped by NRCS as a soil inclusion along drainageways in Map

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining

Unit 52 of the Soil Survey of Carbon Area, Utah (Jansen and Borchert, 1988). Haverdad loam is a very deep, well drained soil mapped in small upland drainageways in the general area. The soil is developing in local alluvium derived dominantly from sandstone and shale. Site vegetation includes mixed grasses, sagebrush, and occasional scattered greasewood.

Permeability of Haverdad is moderate. Available water capacity is about 10 inches. Effective rooting depth is 40 inches or more. Runoff is slow, and the hazard of wind and water erosion is moderate (Jansen and Borchert, 1988). The Range Site for Borchert is Semidesert Loam (Wyoming Big Sagebrush).

Haverdad is classified as a "Fine-loamy, mixed, superactive, calcareous, mesic Ustic Torrifluvent". Haverdad is an established soil series of moderate extent. The most recent NRCS official soil series description, dated June 2002, is on file at Mt. Nebo Scientific. Haverdad site and profile descriptions for WC4 and WC8 follow.

Haverdad Pedon WC4 Site and Profile Description:

Map Unit B; 3% slope; east aspect; mixed grasses and few scattered greasewood vegetation; fine-loamy local alluvium with <1% coarse fragments; small fan on side of small upland drainage; no erosion; soil slightly moist to 14 inches at time of sampling, 3-12-03; 3 inches of coal fines deposition from adjacent Wildcat Loadout facility; sampled for laboratory characterization.

Coal Fines – 3 to 0 inches (3 inches thick)

A horizon – 0 to 4 inches; yellowish brown (10YR 5/6) loam, dark yellowish brown (10YR 4/6) moist; moderate medium granular structure; slightly hard dry consistence,

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

friable moist consistence, slightly sticky and slightly plastic wet consistence; many medium, fine, and very fine, and few coarse roots to 14 inches; strongly effervescent, moderately alkaline (pH 8.3); gradual smooth boundary.

Bw horizon – 4 to 14 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; strongly effervescent, strongly alkaline (pH 8.5); gradual wavy boundary.

Bk horizon – 14 to 28 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; massive structure; hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; common fine and very fine and few medium roots; strongly effervescent, moderately alkaline (pH 8.3); gradual wavy boundary.

C horizon – 28 to 58 inches; yellowish brown (10YR 5/4) loam to sandy loam, brown (10YR 4/3) moist; massive structure; slightly hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; few fine and very fine roots 28 to 44 inches; strongly effervescent, moderately alkaline (pH 8.0); gradual wavy boundary.

2C "red" horizon – 58 to 70+ inches; brown (7.5YR 5/4) gravelly loam, dark brown (7.5YR 4/4) moist; massive structure; slightly hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; slightly effervescent; this horizon not sampled.

Haverdad Pedon WC8 Site and Profile Description:

Map Unit B; 2% slope; east aspect; big sagebrush and mixed grasses (mostly dead) vegetation; fine-loamy local alluvium with < 2% sandstone gravels; small upland drainage; no erosion; 3 inches of coal fines deposition from adjacent Wildcat Loadout facility; soil slightly moist to 26 inches at time of sampling, 3-13-03; sampled for laboratory characterization.

Coal Fines – 3 to 0 inches (3 inches thick)

A horizon – 0 to 4 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium platy structure; soft dry consistence, very friable moist consistence, slightly sticky and slightly plastic wet consistence; common coarse, medium, fine, and very fine roots to 12 inches; moderately effervescent, slightly alkaline (pH 7.7); gradual smooth boundary.

Bw horizon – 4 to 12 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard dry consistence, very friable moist consistence, slightly sticky and slightly plastic wet

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

consistence; moderately effervescent, slightly alkaline (pH 7.8); gradual wavy boundary.

Bk horizon – 12 to 26 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; massive structure; hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; common fine and very fine, and few coarse and medium roots; strongly effervescent, slightly alkaline (pH 7.8); gradual wavy boundary.

Ck horizon – 26 to 38 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; massive structure; hard dry consistence, firm moist consistence, slightly sticky and slightly plastic wet consistence; few coarse, medium, fine, and very fine roots; krotovinas present; moderately effervescent, moderately alkaline (pH 7.9); gradual wavy boundary.

C horizon – 38 to 64 inches; yellowish brown (10YR 5/4) loam-sandy loam, brown (10YR 4/3) moist; massive structure; hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; moderately effervescent, moderately alkaline (pH 7.9); did not hit bedrock.

Haverdad Range of Characteristics:

The described and sampled pedons WC4 and WC8 are typical of Haverdad and are within the range of characteristics for the Haverdad official soil series description (NRCS, June 2002).

Haverdad Soil Suitability and Salvage Depth Recommendations:

Based on an evaluation of the field and laboratory data (see Appendix), Haverdad loam is entirely suitable throughout its profile depth to 54 inches or more. Soil textures are good with loam dominating the upper profile to about 38 inches, and loam to sandy loam to gravelly loam present in the lower substratum. Soil salinity is low with electrical conductivity (EC) values about 0.5 to 2 in the upper profile, and about 0.5 to 4 in the lower "C" horizon. Sodium Adsorption Ratio (SAR) is generally less than 1.0 but can range up to about 4.5 to 6.0 below 14 inches in some

INCORPORATED

MAY 17 2005

Div. of Oil, Gas & Mining

pedons. Soil reaction (pH) is slightly to strongly alkaline with values between 7.7 and 8.5. Calcium carbonate content ranges from about 6 to 11 percent. Organic matter content ranges from about 1.2 to 1.9 percent in the surface layer, to about 0.9 to 1.5 percent at depth in the profile.

If needed, the entire profile to 54 inches or more could be salvaged for use in reclamation activities. The better soil material is in the approximate upper 28 inches. Soil texture is loam and organic matter is about 1 to almost 2 percent. EC and SAR are generally low. Soil texture is good and the soil material can be easily handled. If a more limited amount of soil material is needed, the upper 28 inches can be salvaged as Topsoil. Additional underlying material could be salvaged, as needed, for use as Subsoil.

Map Unit C: Strych Variant, shallow to moderately deep, 2 to 6% slopes

Strych Variant was described and sampled at two representative locations (WC5 and WC9). Strych (deep) was previously mapped in the area as a 10% soil inclusion in NRCS Map Unit 52 (Jansen and Borchert, 1988). Although the official Strych soil series is deep to very deep, the site-specific Strych Variant soil on the Wildcat study area is shallow to moderately deep (10 inches to slightly greater than 20 inches to sandstone bedrock). Strych Variant is developing in thin slopewash alluvium and residuum from calcareous sandstone. Vegetation is open, scattered Pinyon-Juniper woodland with a mixed grass understory.

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

Strych Variant is shallow to moderately deep and well drained. Strych Variant typically has a pale brown to yellowish brown gravelly to very gravelly loam surface layer about 3 inches thick. The "Bw" cambic upper subsoil layer is a pale brown to light yellowish brown gravelly to very gravelly loam to a depth of about 8 or 9 inches. The underlying "Bk" calcic horizon is a pale to very pale brown very to extremely gravelly loam to sandy loam to a depth of about 15 or 16 inches. The substratum is a mixture of "C" horizon and paralithic "Cr" extremely gravelly loam to bedrock encountered at about 20 to 23 inches in depth.

Strych Variant has moderately rapid permeability, low available water capacity, and an effective rooting depth equal to the depth to bedrock. The organic matter content of the surface layer is about 1 to 3 percent. Runoff is medium, and the water erosion hazard is moderate. The Range Site is Semidesert Bouldery Loam (Jansen and Borchert, 1988). Strych Variant is classified as a "Loamy-skeletal, mixed, superactive, mesic, shallow Ustic Haplocalcid". The most recent NRCS official soil series description for Strych, dated October 2002, is on file at Mt. Nebo Scientific.

Strych Variant Pedon WC5 Site and Profile Description:

Map Unit C; 8% slope; south aspect; Pinyon-Juniper and scattered mixed grasses vegetation; thin residuum from sandstone; upland low ridge; slight erosion; 2 inches of coal fines deposition from adjacent Wildcat Loadout facility; soil slightly moist at time of sampling, 3-12-03; not sampled for laboratory analysis.

Coal Fines – 2 to 0 inches (2 inches thick, varies up to 6 inches thick)

A horizon – 0 to 3 inches; pale brown (10YR 6/3) gravelly loam with about 20% sandstone gravels, brown (10YR 5/3) moist; moderate medium granular structure; soft dry consistence, very friable moist consistence, slightly sticky and slightly plastic wet

INCORPORATED

MAY 17 2003

Div. of Oil, Gas & Mining

consistence; many fine and very fine, common medium and coarse roots to 8 inches; strongly effervescent; gradual smooth boundary.

Bw horizon – 3 to 8 inches; pale brown (10YR 6/3) gravelly loam with about 25% sandstone gravels, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard dry consistence; friable moist consistence, slightly sticky and slightly plastic wet consistence; strongly effervescent; gradual wavy boundary.

Bk horizon – 8 to 15 inches; very pale brown (10YR 7/30 very gravelly silt loam to light silty clay loam with about 45% sandstone gravels; massive structure; very hard dry consistence, firm moist consistence, sticky and slightly plastic wet consistence; few coarse, medium, fine, and very fine roots; violently effervescent; gradual wavy boundary.

C/Cr mixed horizon (weathered, fractured sandstone with calcium carbonate and soil fines in cracks and beneath rock fragments) – 15 to 20 inches; pale brown (10YR 6/3) extremely gravelly loam with about 65% sandstone gravels, brown (10YR 5/3) moist; massive structure; very hard dry consistence, firm moist consistence, slightly sticky and slightly plastic wet consistence; few roots in cracks and beneath rock fragments; violently effervescent.

Strych Variant Pedon WC9 Site and Profile Description:

Map Unit C; 8% slope; south aspect; Pinyon-Juniper and mixed grasses vegetation; thin eolian over thin residuum from sandstone; low weathered ridge; slight erosion; 1 inch of coal fines deposition from adjacent Wildcat Loadout facility; soil slightly moist to 9 inches at time of sampling, 3-12-03; sampled for laboratory analysis.

Coal Fines – 1 to 0 inches (1 inch thick)

A horizon – 0 to 3 inches; yellowish brown (10YR 5/4) very gravelly loam with about 25% gravel size sandstone chips, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; slightly hard dry consistence, friable moist consistence; slightly sticky and slightly plastic wet consistence; many medium, fine, and very fine roots to 9 inches; strongly effervescent, slightly alkaline (pH 7/6); clear smooth boundary.

Bw horizon – 3 to 9 inches; light yellowish brown (10YR 6/4) very gravelly loam with about 55% gravel size sandstone chips, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard-hard dry consistence, friable moist consistence, slightly sticky and slightly plastic wet consistence; strongly effervescent, slightly alkaline (pH 7.5); gradual wavy boundary.

Bk horizon – 9 to 16 inches; pale brown (10YR 6/3) extremely gravelly loam-sandy loam with about 75% gravel size sandstone chips, brown (10YR 5/3) moist; massive structure; hard-very hard dry consistence, friable moist consistence, slightly sticky and slightly plastic

INCORPORATED

MAY 17 2003

Div. of Oil, Gas & Mining

wet consistence; common to few medium, fine and very fine roots; violently effervescent, slightly alkaline (pH 7.8); gradual wavy boundary.

C/Cr mixed horizon (weathered, fractured sandstone with calcium carbonate and soil fines in cracks and beneath rock fragments) – 16 to 23 inches; pale brown (10YR 6/3) extremely gravelly sandy loam with over 75% gravel and cobble size sandstone chips, brown (10YR 5/3) moist; massive structure; very hard dry consistence, firm moist consistence, slightly sticky and slightly plastic wet consistence; few roots in cracks and beneath rock fragments; violently effervescent; horizon not sampled for laboratory analysis.

Strych Variant Range of Characteristics:

Depth to the weathered sandstone contact ranges from about 15 to16 inches. Coarse fragment content ranges from 20 to 25% for the surface layer, from 25 to 55% for the upper subsoil layer (Bw), from 45 to 75% for the lower subsoil layer (Bk), and over 65% for the weathered substratum. Reaction (pH) is typically slightly alkaline (pH from 7.5 to 7.8). Soil fines are typically loam to sandy loam.

Strych Variant Soil Suitability and Salvage Depth Recommendation:

Strych Variant is entirely suitable for salvage. EC and SAR are very low, organic matter content ranges from 2.6% in the surface layer, to 2.3% in the upper subsoil, to 0.9% in the lower subsoil. Calcium carbonate content is fair rated with values ranging from 21 to 27 percent. Soil texture (fines) are loam to sandy loam. Coarse fragment content can be moderate to very high. The upper 12 inches can be salvaged as Topsoil, with the underlying material left in place to aid reclamation after mining activities are completed. For laboratory reports, refer to the Appendix

INCORPORATED
MAY 17 2005
Div. of Oil, Gas & Mining

of this document.

Map Unit DL: Disturbed Land

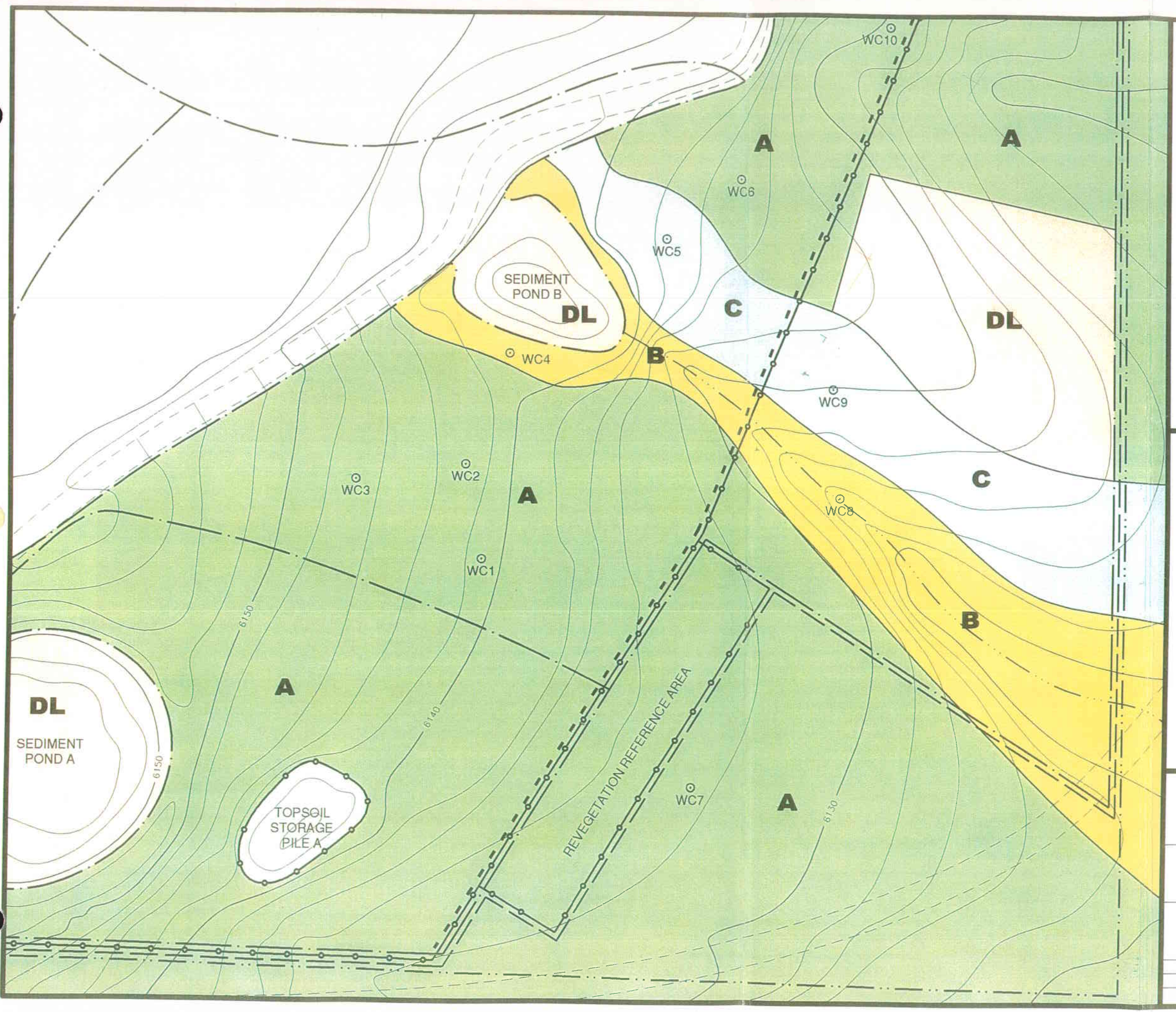
One sedimentation pond is present in the study area, and it is mapped as Disturbed Land. It is immediately adjacent to the current Wildcat Loadout facility. Soil salvage was not evaluated and is not recommended due to the amount of coal fines deposition in the pond. In addition, there is another Disturbed Land delineation in the study area – a recent oil and gas drilling pad. This bladed and highly compacted pad area is in the south-central to south-east portion of the study area, and has no soil available for salvage. It appears that topsoil was not salvaged during the construction of the pad because no soil stockpile was evident near the pad during the current soil survey.

REFERENCES

Jansen, Earl H. and James W. Borchert. 1988. Soil Survey of Carbon Area, Utah. USDA-Soil Conservation Service (now NRCS).

State of Utah, Division of Oil, Gas & Mining. 2002. Guidelines for Management of Topsoil and Overburden (*Draft*). Revised by Priscilla Burton and Robert Davidson. Department of Natural Resources, Salt Lake City, UT.

INCORPORATED
MAY 17 2006
Div. of Oil, Gas & Mining



LEGEND

- **A** — MAP UNIT A
  HERNANDEZ LOAM, 1 TO 6% SLOPES
- **B** — MAP UNIT B
  HAVERDAD LOAM, 2 TO 8% SLOPES
- **C** — MAP UNIT C
  STRYCH VARIANT, SHALLOW TO MODERATELY DEEP, 2 TO 6% SLOPES
- **DL** — MAP UNIT D
  DISTURBED LAND
- ⊙ SOIL SAMPLE LOCATIONS

NORTH

0 40 80 160 240

SCALE: 1" = 80'

SOIL SURVEY MAP

12 ACRE STUDY AREA

ANDALEX RESOURCES, INC.
WILDCAT LOADOUT

MT. NEBO SCIENTIFIC, INC.
RESEARCH & CONSULTING

FIELD MAPPED: J. NYENHUIS	CHECKED: P. COLLINS
DRAWN: G. BARTON	DATE: JULY 08, 2003
FILE: MAP/MT NEBO/ANDALEX-WILDCAT/12 ACRE SOIL V01.DWG	

RECEIVED
JUL 17 2003
Div. of Oil, Gas & Mining

APPENDIX
(Laboratory Data)

INCORPORATED

MAY 17 2006

Div. of Oil, Gas & Mining

Soil and Plant Analysis Lab
255 WIDB
Brigham Young University
Provo, Utah 84602
801-378-2147

Name: Rick Collins/Mt. Nebo
Address: P.O. Box 337
City, ST, ZIP: Springville, UT 84663
Date: 3/14/03

SOIL ID: Wildcat

Customer Sample ID	ppm P	ppm NO3-N	%OM	pH	EC dS\M	%Sand	%Clay
Wildcat 1 East 0-13"	4.52	4.39	2.79	7.68	0.65	43.84	24.72
Wildcat 1 East 13-23"	0.03	5.32	0.56	7.83	0.58	47.84	16.72
Wildcat 1 East 23-54"	1.51	2.07	0.67	8.18	2.00	26.56	29.72
Wildcat 2 North 0-12"	3.77	4.13	3.64	7.81	0.62	38.56	24.72
Wildcat 2 North 12-32"	0.79	2.67	0.90	7.83	0.60	32.20	25.72
Wildcat 2 North 32-54"	4.99	1.23	0.48	8.46	3.00	32.56	23.72

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

Soil and Plant Analysis Lab
255 WIDB
Brigham Young University
Provo, Utah 84602
801-378-2147

Name: Rick Collins/Mt. Nebo
Address: P.O. Box 337
City, ST, ZIP: Springville, UT 8466
Date: 3/14/03

SOIL ID: Wildcat

Customer Sample ID	%Silt	ppm Ca-SAR	ppm Mg-SAR	ppm K-SAR	ppm Na-SAR	SAR
Wildcat 1 East 0-13"	31.44	129.20	29.44	40.65	13.51	0.28
Wildcat 1 East 13-23"	35.44	97.56	36.75	6.90	17.34	0.38
Wildcat 1 East 23-54"	43.72	49.15	142.00	6.10	60.82	0.99
Wildcat 2 North 0-12"	36.72	115.10	21.62	10.87	16.31	0.36
Wildcat 2 North 12-32"	42.08	92.96	30.80	9.29	21.07	0.48
Wildcat 2 North 32-54"	43.72	32.78	220.40	22.23	469.70	6.46

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

Soil and Plant Analysis Lab
255 WIDB
Brigham Young University
Provo, Utah 84602
801-378-2147

Name: Rick Collins/Mt. Nebo
Address: P.O. Box 337
City, ST, ZIP: Springville, UT 8466
Date: 3/14/03

SOIL ID: Wildcat

Customer Sample ID	%Moisture Sat.	%CaCO3	ppm HCO3
Wildcat 1 East 0-13"	35.17	9.66	270.25
Wildcat 1 East 13-23"	33.50	18.68	181.90
Wildcat 1 East 23-54"	39.56	15.55	161.11
Wildcat 2 North 0-12"	36.60	10.77	187.10
Wildcat 2 North 12-32"	37.29	13.75	174.11
Wildcat 2 North 32-54"	34.70	15.11	166.31

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

Mr Patrick Collins/Mt Nebo Scientific Inc
330 East 400 South Suite 6
P O Box 337
Springville UT 84663

FAX 375-0321

Copy to James Nyenhuis, Certified Soil Scientist

Colorado State University
Soil, Water and Plant Testing Laboratory
Natural & Environmental Sciences Bldg - A319
Fort Collins, CO 80523-1120

(970) 491-5061 FAX: 491-2930

DATE RECEIVED: 03-17-2003
DATE REPORTED: 04-15-2003

BILLING: S B19592

RESEARCH SOIL ANALYSIS

ANDALEX RESOURCES, WILDCAT LOADOUT, HELPER, UTAH

Lab #	Sample ID #	paste pH	paste EC mmhos/cm	% saturation	Lime Estimate	% OM	AB-DTPA Extract ppm NO_3-N	P	K	Zn	Fe	Mn	Cu
R3518	WC4 0-4	8.3	0.9	37.2	High	1.2	1.4	5.2	176	<0.01	4.49	1.05	0.63
R3519	WC4 4-14	8.5	0.7	36.7	High	1.0	1.5	4.5	147	<0.01	3.52	0.83	0.57
R3520	WC4 14-28	8.3	1.7	33.4	High	1.0	1.2	2.6	141	<0.01	4.11	0.72	0.87
R3521	WC4 28-58	8.0	4.2	36.2	High	0.9	0.9	3.4	117	<0.01	2.52	0.56	0.71
R3522	WC6 0-3½	7.9	0.6	36.4	High	2.1	3.0	11.0	360	0.16	4.06	2.10	1.50
R3523	WC6 3½-13	7.8	0.5	41.3	High	1.6	3.2	0.5	192	<0.01	3.81	0.97	0.93
R3524	WC6 13-25	8.0	0.5	37.7	High	1.2	2.3	0.5	84.9	<0.01	6.19	0.97	0.95
R3525	WC6 25-38	8.4	5.5	39.8	High	1.2	1.4	1.4	97.9	<0.01	7.03	0.83	0.77
R3526	WC6 38-64	8.5	10.1	45.6	High	1.7	1.6	4.5	174	0.07	6.12	0.77	1.14
R3527	WC7 0-3	7.9	0.5	35.1	High	2.6	1.8	7.5	274	0.29	4.62	1.78	1.54
R3528	WC7 3-10	7.8	0.5	36.5	High	2.1	2.2	0.5	273	0.05	4.27	0.95	1.29
R3529	WC7 10-22	7.9	0.4	41.1	High	1.9	3.0	0.4	103	<0.01	4.72	1.03	1.14
R3530	WC7 22-38	8.3	1.7	47.2	High	1.8	1.7	1.4	116	<0.01	4.77	1.10	0.91
R3531	WC7 38-56	8.6	2.4	36.5	High	1.2	1.4	4.0	106	<0.01	4.42	0.77	0.64
R3532	WC8 0-12	7.7	0.9	36.1	High	1.9	18.9	3.3	207	0.23	4.34	1.14	1.44
R3533	WC8 12-26	7.8	0.6	37.1	High	1.7	7.5	0.5	159	<0.01	3.51	0.74	0.93
R3534	WC8 26-54	7.9	0.4	33.5	High	1.5	2.6	0.6	81.5	<0.01	4.68	0.81	1.06
R3535	WC9 0-3	7.6	0.6	42.5	High	2.6	6.1	2.5	171	0.18	6.91	1.80	1.38
R3536	WC9 3-9	7.5	1.0	45.9	High	2.3	11.5	0.6	104	<0.01	5.51	1.28	1.04
R3537	WC9 9-16	7.8	0.5	43.4	High	0.9	6.1	0.6	55.3	0.01	3.18	0.86	1.03
R3538	WC10 0-12	8.0	1.7	38.1	High	1.5	1.2	1.7	91.5	<0.01	4.36	0.72	0.64
R3539	WC10 12-30	8.0	8.5	42.5	High	1.9	0.9	4.4	115	0.04	5.14	0.81	0.63
R3540	WC10 30-62	8.0	12.0	35.0	High	1.2	0.9	3.8	84.7	0.08	2.49	0.67	0.35

A-4
INCORPORATED
Div. of Oil, Gas & Mining
RECEIVED MAY 17 2003

Mr Patrick Collins/Mt Nebo Scientific Inc
330 East 400 South Suite 6
P O Box 337
Springville UT 84663

Copy to James Nyenhuis, Certified Soil Scientist

Colorado State University
Soil, Water and Plant Testing Laboratory
Natural & Environmental Sciences Bldg - A319
Fort Collins, CO 80523-1120

(970) 491-5061 FAX: 491-2930

DATE RECEIVED: 03-17-2003
DATE REPORTED: 04-15-2003

BILLING: SB19592

RESEARCH SOIL ANALYSIS

ANDALEX RESOURCES, WILDCAT LOADOUT, HELPER, UTAH

Lab #	Sample ID #	%Sand	%Silt	%Clay	Texture	% very fine sand from hydrometer	% $CaCO_3$ equiv	meq/L Ca	meq/L Mg	meq/L Na	meq/L K	SAR
R3518	WC4 0-4	42	35	23	Loam	38	11.8	2.0	6.8	2.2	0.6	1.0
R3519	WC4 4-14	42	38	20	Loam	42	12.8	0.9	5.9	1.4	0.6	0.7
R3520	WC4 14-28	40	40	20	Loam	38	13.6	2.7	5.4	11.3	0.6	5.6
R3521	WC4 28-58	48	36	16	Loam/Sandy Loam	46	11.3	15.4	17.9	18.8	<0.1	4.6
R3522	WC6 0-3½	36	36	28	Clay Loam	31	10.5	3.5	1.5	1.7	0.9	1.1
R3523	WC6 3½-13	30	40	30	Clay Loam	30	14.2	2.9	1.4	0.8	0.4	0.5
R3524	WC6 13-25	38	39	23	Loam	38	11.6	1.8	2.3	1.3	0.2	0.9
R3525	WC6 25-38	38	41	21	Loam	38	11.8	4.1	21.5	32.5	0.1	9.1
R3526	WC6 38-64	28	40	32	Clay Loam	24	11.8	4.8	29.8	69.3	0.2	16.7
R3527	WC7 0-3	40	34	26	Loam	38	6.40	3.8	1.2	0.7	0.3	0.5
R3528	WC7 3-10	38	46	16	Loam	38	7.10	2.9	1.1	0.7	0.4	0.5
R3529	WC7 10-22	30	42	28	Clay Loam	29	14.2	1.6	1.7	0.8	0.1	0.6
R3530	WC7 22-38	21	48	31	Clay Loam	18	16.6	1.8	9.4	6.8	0.2	2.9
R3531	WC7 38-56	40	41	19	Loam	40	12.3	1.0	8.6	14.9	0.5	6.8
R3532	WC8 0-12	36	45	19	Loam	36	6.17	6.3	1.6	0.5	0.2	0.3
R3533	WC8 12-26	39	39	22	Loam	39	9.43	3.4	1.1	0.7	0.3	0.4
R3534	WC8 26-54	42	39	19	Loam	42	8.15	1.7	1.2	0.7	0.1	0.6
R3535	WC9 0-3	48	29	23	Loam	37	27.1	3.6	1.1	0.5	0.3	0.3
R3536	WC9 3-9	49	30	21	Loam	47	21.7	4.5	2.0	0.5	1.6	0.3
R3537	WC9 9-16	52	30	18	Loam/Sandy Loam	51	21.8	2.8	1.4	0.4	0.1	0.3
R3538	WC10 0-12	34	44	22	Loam	33	14.4	7.2	7.8	1.3	<0.1	0.5
R3539	WC10 12-30	22	50	28	Clay Loam	17	10.7	17.4	25.7	38.9	<0.1	8.4
R3540	WC10 30-62	43	39	18	Loam/Sandy Loam	43	8.04	18.0	28.6	50.4	<0.1	10.4

APPROVED
TITLE Extension Soil Testing Specialist

A-5

INCORPORATED
MAY 17 2003
Div. of Oil, Gas & Mining

APPENDIX D
(SUPPLEMENT)

SOILS REPORT
MATERIAL STORAGE AREA
PRISCILLA BURTON

Inter-Mountain Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report

West Ridge Resources, Inc.
P.O. Box 1077
Price, Utah 84501

Report ID: S0704107001

Project: Soil and Coal Waste Analysis
Date Received: 4/9/2007

Date: 5/7/2007
Work Order: S0704107

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Organic Matter	Calcium	Magnesium	Sodium	Potassium	Available Potassium
		s.u.	%	dS/m	%	meq/L	meq/L	meq/L	meq/L	meq/100g
S0704107-001	Tan-Topsoil	7.9	46.7	0.32	1.8	1.85	1.08	0.17	0.31	0.39
S0704107-002	Gray - Coal Mine Waste	7.3	42.2	8.55	6.9	28.3	27.7	27.9	1.37	0.50

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report

West Ridge Resources, Inc.

P.O. Box 1077
Price, Utah 84501

Report ID: S0704107001

Project: Soil and Coal Waste Analysis
Date Received: 4/9/2007

Date: 5/7/2007
Work Order: S0704107

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Very Fine Sand %	Boron ppm	Nitrogen Nitrate ppm	Phosphorus ppm	Selenium ppm	CO3 %
S0704107-001	Tan-Topsoil	50.0	36.0	14.0	Loam	45.6		0.84	0.71		8.2
S0704107-002	Gray - Coal Mine Waste	60.0	26.0	14.0	Sandy Loam	23.7	1.55	19.6	3.02	0.09	9.4

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report

West Ridge Resources, Inc.

P.O. Box 1077
Price, Utah 84501

Report ID: S0704107001

Date: 5/7/2007

Work Order: S0704107

Project: Soil and Coal Waste Analysis

Date Received: 4/9/2007

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neut. Pot. t/1000t	T.S. ABP t/1000t
S0704107-001	Tan-Topsoil				
S0704107-002	Gray - Coal Mine Waste	0.39	12.2	116	103

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor

Karen Secor, Soil Lab Supervisor

APPENDIX E

WILDLIFE ENHANCEMENT PROJECT

3100
(U-066)

PROJECT DESIGN PACKAGE FOR MITIGATION OF IMPACTS TO MULE DEER CRITICAL WINTER RANGE

TOWER RESOURCES COAL LOADOUT FACILITY

The following mitigation package is provided to Tower Resources in accordance with the following stipulation (attached to rights-of-way U-52810, Temporary Use Permit U-48027, and mineral sale borrow area) associated with the Tower Resource Coal Loadout Facility Development Project).

> The holder shall mitigate impacts to mule deer critical winter range through enhancement of adjacent habitats. For every acre of surface disturbed habitat associated with the project under permit, the holder shall enhance one acre of adjacent critical winter range. Enhancement method shall be interseeding with browse and forb seed. Enhancement area, plant species and application rates shall be determined by the Authorized Officer. The project design shall be supplied to the holder 60 days prior to initiation of project work (October 15 through December 15). Expenses for enhancement need not exceed $250 per acre.

Project Objective: Improve winter and spring forage for mule deer on critical winter range in close proximity to surface disturbance associated with the loadout facility.

Project Description: Treat identified areas (existing PJ chainings) on Map 1 as follows:

1. Remove all marked mature pinyon and juniper growing within delineated areas and hand seed disturbed basin.

2. Seed a total of thirteen acres (approximately 50 percent) of the treatment area with the forb-browse seed mixture listed below.

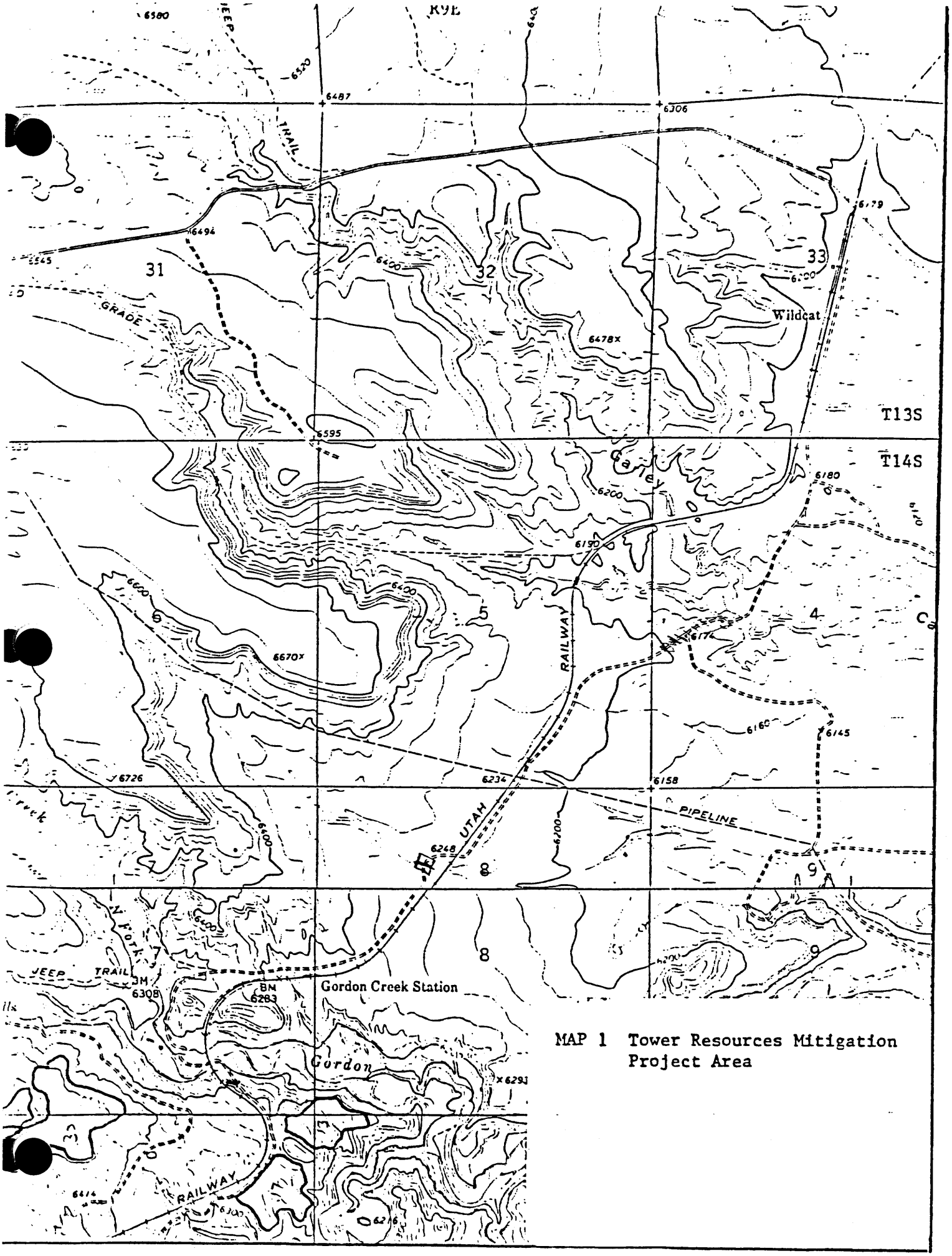
Treatment should be accomplished during the period from October 1 until October 30 or as otherwise mutually agreed on by operator and Authorized Officer. It is recommended that all work cease and equipment be removed October 20, the beginning of the regular deer hunt. The regular rifle deer hunt is October 20 to October 30.

Detailed Project Description and Methods

Equipment needed:

1 - D4 or similar size Crawler Tractor
1 - D7 or other 60-70 Drawbar horsepower Crawler Tractor
1 - Rangeland Drill equiped with depth bands (provided by BLM)*
1 - Brushland Plow (provided by BLM)*
2 - Track mounted seed Dribblers

*See terms for equipment loan.



MAP 1 Tower Resources Mitigation Project Area

Project Outline:

1. Using D7 Crawler tractor equiped with dozer blade and two track mounted seed dribblers, push down a limited number (less than 25) of marked mature pinyon and juniper trees within treatment areas. Hand seed each disturbed basin created by uprooting mature trees.

2. Using D7 Crawler tractor, pull brushland plow across treatment areas, strictly along the contour, to prepare suitable seed bed in which to drill seed. Adjust the pull angle of the plow to ensure all sodded grasses are turned over. The entire treatment area will be worked in a contour strip pattern in which 50 percent will be prepared for seeding while 50 percent is left undisturbed. The strip pattern should approximate 6 feet scalps separated by 6 feet strips of undisturbed ground.

3. Following seed bed preparation, use D4 Crawler tractor to pull rangeland drill along seed bed.

4. Hand seed all other disturbed sites associated with enhancement project (i.e., equipment load and unload sites).

   Note: All hand seeding will include hand raking following application of seed.

5. Use the following listed species and application rates for seeding within the treatment area. All seed must meet or exceed specifications listed below or otherwise be approved by the Authorized Officer prior to use in the enhancement project. Special attention should be given to the requirement for germination and purity tests. Seed should be mixed by the supplier after seed samples have been drawn for testing.

SEED SPECIFICATIONS

Application Rates and Minimum PLS

Species	Lbs/Acre (PLS)	Minimum PLS[1]
Antelope Bitterbrush	2.0	.8
Fourwing Saltbush	2.90	.5
Prostrate Kochia	.50	.5
Utah Serviceberry	.25	.9
True Mountain Mahogany	.35	.8
Small Burnet	2.0	.9
Common Sainfoin	2.0	.8
Alfalfa (Nomad/Ladak, Ranger)	2.0	.8
Total	12.0	

[1]Germination and Purity Tests conducted by Utah State Seed Lab are required on each lot of seed used. Provide copies of test results to Authorized Officer within 60 days following project completion date, October 20, 1984.

Seed Source Requirement

Antelope Bitterbrush: Maybell variety or Utah seed collected at elevation between 6,000 and 6,800 feet and collected within 200 airline miles of project area.

Fourwing Saltbush, Serviceberry, True Mountain Mahogany: Collected at elevation between 5,500 and 6,800 feet and collected within 200 airline miles of project area.

Terms For Use of Government Equipment

Tower Resources Coal Company agrees to hold the Bureau of Land Management free from liability for any claims against them for damages caused during the use of the government equipment.

Tower Resources Coal Company agrees to repair or replace damaged, lost, or stolen equipment while in his custody. Replacement will be made at fair market value of the equipment at the time of destruction or loss.

Tower Resources Coal Company agrees to do routine periodic maintenance on government equipment while in custody.

Tower Resources Coal Company accepts responsibility for transporting government equipment from Price BLM wareyard and returning it to the Price BLM wareyard by November 1, 1984.

The Bureau of Land Management does not make any warranties regarding the condition of equipment provided to Tower Resources Coal Company.

The Bureau of Land Management does not assume liability for damages of any kind resulting from the use of the equipment provided to Tower Resources Coal Company.

The Authorized Officer shall have a representative present during all phases of enhancement work. The representative, experienced with the use of these specialized pieces of equipment and this seeding method, will provide direction and guidance onsite for any problems that may occur.

The Tower Resources Mitigation Project was reviewed by the Utah Division of Wildlife resources. They approved of the project areas selected and strongly supported the project description and methods and provided input for the species selected for seeding.

Tower Resources Coal Company acknowledges, by signing below, that he/she knows, understands and accepts the terms and conditions set forth in this mitigation plan and that the implementation of the plan will satisfy the stipulation (as written on page 1) for rights-of-way U-52810, temporary use permit U-48027 and mineral sale borrow area.

Tower Resources Company Representative

October 9, 1984
Date

III. DESCRIPTION OF THE AFFECTED ENVIRONMENT

A. Area Description

The proposal area is located approximately 7 miles northwest of Price, Utah adjacent to state highway U-139.

B. Environmental Elements

The area has a semiarid climate with precipitation averaging 12 to 14 inches per year. The average annual temperature is 46° F.

The proposal area is located at an elevation of 6100 feet in a gently sloping (3-7%) sagebrush flat.

Two soils were identified in the proposal area through an order III soil survey conducted by the Soil Conservation Service in 1978. The predominant soil type is a very deep well drained sandy loam. Topsoil depth (A11 and A12 horizons) is approximately 7 inches. Organic matter content is low in the surface layer and the erosin hazard is low for the undisturbed site. The other soil identified in the proposal area is a very deep well drained loam. Topsoil depth (A1 horizon) is approximately 3 inches. Less than 10 acres of this soil type is present.

Air quality in the area is good within fugitive dust being the major contribitor to air quality degradation. No live water is present in the proposal area.

Vegetation consists mainly of sagebrush with a few miscellaneous grasses including Indian ricegrass and curly grass. This is considered critical deer winter habitat.

The major wildlife species that inhabitat the area include mule deer, elk, coyotes, cottontail, rabbits, gray fox, bald eagles, golden eagles, small rodents and reptiles.

The proposal area is located in VRM Class IV. Management guidelines for this class state changes in form, line, color and texture may subordinate the original composition and character of the landscape, but must reflect what could be a natural occurrence.

1. Mandatory Elements

a. Threatened or Endangered Plants and Animals

There are no known threatened or endangered plants that inhabit the area. Two species of birds, the endangered bald eagle and protected golden eagle are known to use this area; however, no known nesting sites have been identified in the proposal area.

b. Wetlands

The proposal area has not been designated a wetland.

c. Prime or Unique Farmland

The proposal area has not been designated prime or unique farmland.

d. Alluvial Valley Floors

The proposal area has not been designated an alluvial valley floor.

e. Wilderness

No public land adjacent or near the proposed right-of-way is subject to Wilderness Interim Management Policy.

f. Areas of Critical Environmental Concern

The proposal area has not been designated an area of critical environmental concern nor have any areas in the vicinity of the proposal.

g. Cultural Resources

A cultural resource inventory was conducted for the proposal area. There were no significant findings (See attached report).

C. Land Use Elements

1. Site Data

a. Land Ownership

Master title plats disclose that both the surface and mineral estates are owned by the Federal Government and managed by the BLM.

b. Rights Granted in the Immediate Area

U-32293 - 10 foot wide telephone right-of-way.

U-20384 - 50 foot wide powerline right-of-way.

SL-015794 - 200 foot wide railroad right-of-way.

U-29170 - SLUP, SLB&M T.13 S., R. 9 E., Section 33, E½E½SE¼NW¼, W½SW¼NE¼, W½SE¼SW¼NE¼, NE¼NE¼SW¼, W½NW¼NW¼SE¼.

c. Pending Applications

U-49754 - Right-of-way, SLB&M, T. 13 S., R. 9 E., Section 33, E½E½SE¼NW¼, W½SW¼NE¼, W½SE¼SW¼NE¼.

U-33746 - State exchange application, W½ Section 33.

d. Land Classification

Subject land has been classified for multiple use management under serial number U-4096 dated March 5, 1968.

e. Access

Both legal and physical access are via State Highway 139, also known as county road number 6573.

2. Existing Land Uses

Land adjacent to the proposed coal loadout and storage facility is being used for coal storage, weighing and loading and a training center and warehouse in connection with the Beaver Creek Coal Mine. Other land adjacent to the site is being used for wildlife habitat, grazing and incidental recreational purposes. The proposal area is located within the Consumers Sheep Allotment. Mr. Steve Stamatakis is authorized to graze 510 AUMs on the allotment.

3. Planning Recommendations, Consultations and Other Considerations

a. BLM-MFP Planning Recommendations

The proposal is located in the Wattis Planning Unit for which an approved URA-MFP has been written. The planning recommendations made in this document support the proposed land use.

b. Other Federal Agency Plans for the Proposal Area

None are known

c. State Plans

The state of Utah has applied to exchange the W½ of Section 33 T. 13 S., R. 9 E., as part of the Arches State Exchange (U-33746). The application was filed on June 17, 1976. Opposition to this exchange has been voiced by the Carbon County board of Commissioners and the Utah Division of Wildlife Resources.

d. Local Plans

Carbon County has placed this area in a mining and grazing zone (M&G-1) in their revised zoning resolution. The proposed use would be compatible with zoning objectives.

IV. ENVIRONMENTAL CONSEQUENCES

A. Alternative No. 1

1. Anticipated Impacts

a. Air Quality

Impacts to air quality would be an increase in particulate emissions from stockpiled topsoil and coal. Increased emission levels from stockpiled topsoil should be low and for a short duration. Blowing dust from stockpiled coal could cause a significant increase in particulate emissions if not adequately controlled.

b. Soils

Soil productivity would be lost on approximately 73 acres for at least 30 years or until the areas were successfully reclaimed. An increase in wind and water erosion would occur on those areas where vegetation is removed during construction and prior to having an adequate cover of gravel or other surface material.

Concentrations of suspended sediments would increase temporarily severalfold if high intensity rainfall occurs causing sediment retaining structures to fail.

c. Vegetation

Vegetation would be removed and destroyed on approximately 73 acres. Vegetation productivity would be lost for the life of the project. If reclamation were successful, vegetative productivity could be greatly improved.

d. Wildlife

The proposed project would significantly impact wintering deer on and adjacent to the project area. Impacts, direct and indirect, would be associated with both construction and operation of the facility. Direct impacts are those resulting from physical loss of critical winter habitat, and would completely displace current deer use. Seventy-three acres would be impacted in this way and would displace approximated 7 deer each year for the life of the facility. Indirect impacts are those resulting from disturbance to adjacent critical winter habitat caused by construction and operation of the facility. An estimated 80% of current deer use (8 deer) would be displaced from 79 acres adjacent to the proposed facility each year of operation.

e. Grazing

The permittee would loose approximately 8 AUMs of grazing capacity due to a decrease in public land acreage available for livestock grazing within the allotment.

f. Landscape Character

Landscape character would be altered due to removal of vegetation, leveling of this area and placement of coal piles and loading equipment. However, this impact would not be significant in light of coal loadout equipment and piles presently onsite. There is also a warehouse, training center, fuel tanks, scalehouse and miscellaneous equipment located on public land adjacent to the proposal area, under Special Land Use Permit U-29170.

2. Possible Mitigating Measures

a. Air Quality

Measures to control fugitive dust including watering and the use of chemical suppressants should be employed to keep particulate emission levels down. Also all disturbed areas not required for operation or maintenance of the facility should be seeded.

b. Soils

Before the site is constructed a plan to protect the hydrologic balance including sedimentation ponds, dams, diversion ditches, etc. should be designed. Also, all topsoil should be removed, stockpiled and protected for later use when reclamation operations begin. Stockpiled topsoil should be protected by seeding with a quick growing cover plant and a permanent perennial plant.

c. Vegetation

By seeding all areas not required for operation or maintenance of the facility and seeding the entire site when the right-of-way terminates, loss of vegetation would almost totally be mitigated. Also use of the recommended species over the present sagebrush cover would greatly improve the productivity and habitat.

d. Landscape Character

All structures located on the right-of-way could be painted a nonstructive color to help blend in with the existing landscape.

e. Other Mitigating Measures

Appendix A lists the terms and conditions developed from the above mentioned measures in addition to others. This will be attached to the right-of-way grant to help mitigate environmental impacts.

3. Unavoidable Adverse Impacts

Loss of critical deer winter habitat and the displacement of approximately 8 deer cannot be avoided if the facility is built where proposed. Also the reduction in grazing capacity for the permittee of approximately 8 AUMs cannot be avoided.

4. Irretrievable or Irreversible Commitment of Resources

None

6514
(U-066)

PROJECT DESIGN PACKAGE FOR MITIGATION OF IMPACTS TO MULE DEER CRITICAL WINTER RANGE

ANDALEX RESOURCES COAL LOADOUT FACILITY

The following off-site mitigation ~~packages~~ provided to Andalex Resources by the BLM is coordination with the Utah Division of Wildlife Resources to meet a mitigation requirement of the Utah Division of Oil, Gas and Mining for the permitting of the Wildcat loadout facility. Two options are presented. Either option will meet the requirement to: mitigate impacts to 15 acres of critical winter range which has been taken out of production as mule deer critical winter range.

OPTION 1 - BROWSE INTERSEEDING

Project Objective: Improve winter and spring forage for mule deer on critical winter range in close proximity to surface disturbance associated with the loadout facility.

Project Description: Treat identified area (existing PJ chainings) on Map 1 as follows:

Seed a total of fifteen acres (approximately 50 percent) of the treatment area with the forb-browse seed mixture listed below. Treatment should be accomplished during the period from October 15 until November 15 or as otherwise mutually agreed on by operator and authorized officer.

Project Outline:

1. Complete an archaeological clearance on 30-acre project area.

2. Using D7 Crawler tractor with dozer blade, pull brushland plow across treatment areas, strictly along the contour, to prepare suitable seed bed in which to drill seed. Adjust the pull angle of the plow to ensure all sodded grasses are turned over. The entire treatment area will be worked in a contour strip pattern in which 50 percent will be prepared for seeding while 50 percent is left undisturbed. The strip pattern should approximate 6 feet scalps separated by 6 feet strips of undisturbed ground.

3. Following seed bed preparation, use D4 Crawler tractor or suitable rubber-tired implement to pull rangeland drill along seed bed.

4. Hand seed all other disturbed sites associated with enhancement project (i.e., equipment load and unload sites).

Note: All hand seeding will include hand raking following application of seed.

5. Use the following listed species and application rates for seeding within the treatment area. All seed must meet or exceed specifications listed below or otherwise be approved by the authorized officer prior to use in the enhancement project. Special attention should be given to the seed source requirement.

Equipment needed:

1 - D4 or similar size Crawler tractor
1 - D7 or other 60-70 Drawbar horsepower Crawler tractor
1 - Rangeland drill, equipped with depth bands (provided by BLM)*
1 - Brushland plow (provided by BLM)*
2 - Track-mounted seed dribblers

*See terms for equipment loan.

SEED SPECIFICATIONS

Species	Lbs/acre (PLS)
Mtn. big sage	.5
Antelope bitterbrush[1]	2.0
Fourwing saltbush[1]	3.0
Prostrate Kochia	.50
Utah serviceberry[1]	.5
True mountain mahogany[1]	.5
Whitestem rubber rabbitbrush	1.0
Small burnet	2.0
Common sainfoin	2.0
Alfalfa (Nomad/Ladak, Ranger)	2.0
Total	12.0

[1]Seed source requirement:

Antelope bitterbrush: Maybell variety or Utah seed collected at elevation between 6,000 and 6,800 feet.

Fourwing saltbush: Rincon variety or seed collected at elevation between 5,500 and 6,800 and collected within 200 airline miles of project area.

Utah serviceberry, True mtn. mahogany: Collected at elevation between 5,500 and 6,800 feet and collected within 200 airline miles of project area.

Terms for Use of Government Equipment

Andalex Resources Coal Company agrees to hold the Bureau of Land Management free from liability for any claims against them for damages caused during the use of the government equipment.

Andalex Resources Coal Company agrees to repair or replace damaged, lost, or stolen equipment while is their custody. Replacement will be made at fair market value of the equipment at the time of destruction or loss.

Andalex Resources Coal Company agrees to do routine periodic maintenance on government equipment while in custody.

Andalex Resources Coal Company accepts responsibility for transporting government equipment from Price BLM wareyard and returning it to the Price BLM wareyard within 10 days following project completion.

The Bureau of Land Management does not make any warranties regarding the condition of equipment provided to Andalex Resources Coal Company.

The Bureau of Land Management does not assume liability for damages of any kind resulting from the use of the equipment provided to Andalex Resources Coal Company.

The authorized officer shall have a representative present during all phases of enhancement work. The representative, experienced with the use of these specialized pieces of equipment and this seeding method, will provide direction and guidance onsite for any problems that may occur.

OPTION 2 - WATER CATCHMENT INSTALLATION

Project Objective: Improve distribution of mule deer and elk on critical winter range and thereby reduce pressure on browse in highly concentrated use areas. The guzzler will serve to increase use in the area of the catchment in fall, winter and spring and reduce use on the adjacent critical winter range.

This mitigation project will also benefit a large diversity of other game and nongame wildlife species dependant on free water.

Project Description: Place water catchment device in location shown on Map 1. Recommended catchment design is included as Attachment 1. Minimum specifications for catchment design are listed below.

Catchment Specifications

2,100 gallon storage capacity, heavy construction top exterior drinking ramp, top and ramp black (for greater solar radiation).

Project Outline:

1. Excavate a circular basin 16 inches deep and 16 feet in diameter.

2. Assemble 4 quarter panels to make basin or storage tank, position and level.

3. Assemble 4 quarter panels to make top and set in place.

4. Excavate an area about 4 feet from catchment to set trough and connect to catchment with 1 1/2-inch insulated PVC pipe.

5. Bolt rib caps on top, fill in around catchment and hand seed disturbed soil.

Installation requires about 34 work hours to complete. The archaeological clearance for this project can be completed by the BLM.

Equipment and manpower needed:

Hand tools (shovels, breaker bar, 2 - 1/2 inch ratchet sets)
1 - caulking gun
1 - full size pickup - 1/2 or 3/4 ton
3 - laborers

For specific installation instructions, see attached brochure.
(Note: Installation instructions are for a 1,000-gallon unit, but installation for the 2,100-gallon unit is very similar.)

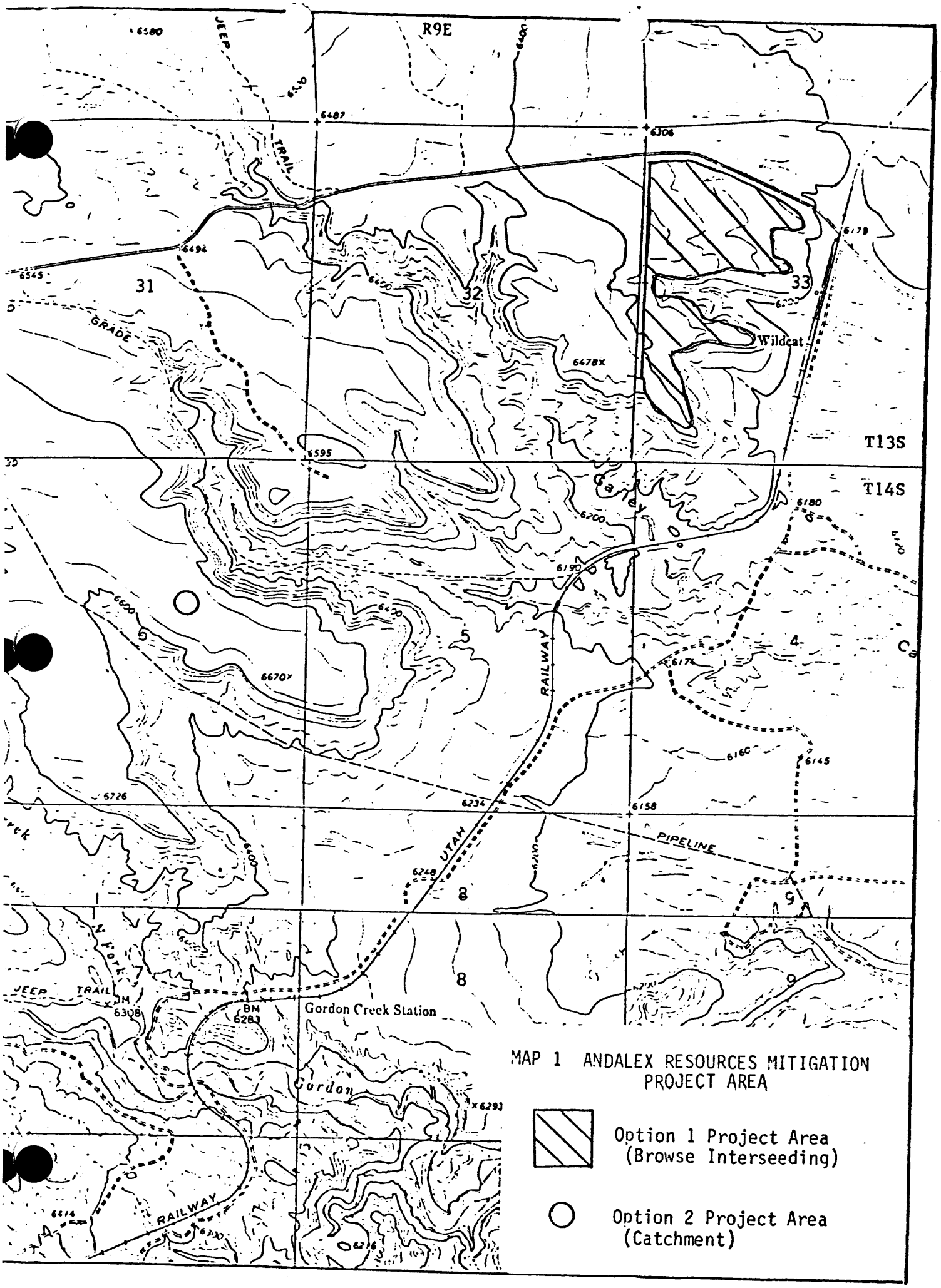
The authorized officer shall have a representative present during project construction. The representative will select the exact site location and assist in the construction.

A representative of Andalex Resources acknowledges, by signing below, that he/she understands and accepts the terms and conditions set forth in this mitigation plan and that the implementation of the plan will satisfy the offsite mitigation stipulation for the permitting of the loadout facility.

Michael W Stasson
Andalex Resources Company Representative

4·20·89
Date

Wang 0202G



MAP 1 ANDALEX RESOURCES MITIGATION PROJECT AREA

Option 1 Project Area (Browse Interseeding)

Option 2 Project Area (Catchment)

APPENDIX F

WILDLIFE RESOURCES INFORMATION

FISH AND WILDLIFE RESOURCE INFORMATION

Andalex Resources, Inc. - Tower Division

(Wildcat Coal Loadout)

General Wildlife Information

Wildlife Diversity and Status

The coal loadout area (Section 33, T13S, R9E) encompasses sagebrush/grass and pinion/juniper ecosystems adjacent to the Gordon Creek Wildlife Management Area. These ecosystems lie along the base of the east side of the Wasatch Plateau in Carbon County, Utah. The Wasatch Plateau is an expansive and diverse biogeographic area (Area A identified in Appendix A) that could be inhabited on occasion or during different seasons of the year by 364 species of vertebrate wildlife. From this assemblage, 168 species (no picinian, no amphibian, 16 reptilian, 101 avian and 51 mammalian species) are likely inhabitants of the coal loadout area. It is interesting to note that 98% of the species associated with the project are protected -- of these 34 species are of high interest to the state of Utah.

The Division Publication No. 78-16 "Species List of Vertebrate Wildlife That Inhabit Southeastern Utah" is appended (Appendix A) to this report. It identifies those species having potential to inhabit Southeastern Utah and the Biogeographic Area (Area A), that surrounds the project. Those that are believed to inhabit the environs of the loadout area are denoted in Appendix A with an explanation mark (!). Appendix A also identifies individual species that are protected and/or considered to be of high interest (*) as well as

their relative abundance, population trend and generalizations concerning habitat use areas.

Ecosystems and Their Relative Biological Value

Ecosystems

The coal loadout facility lies within a submontane setting adjacent to the Gordon Creek Wildlife Management Area. The project site is comprised of pinion/juniper and sagebrush/grass ecosystems lying between an elevation of 6,120 feet and 6,240 feet.

Qualitative Ranking

A map-overlay (1:250,000 scale) denoting rankings of use areas for individual high interest species is not necessary, since all of the projects surface facilities lie within critical valued deer and elk winter range. The legal section of land (Section 33, T13S, R9E) associated with the loadout project has been ranked as being of critical biological value to the local areas total wildlife resource.

Critical valued ecosystems or wildlife use areas are followed in respective importance by high-priority, substantial and limited valued areas. Without question, man and his facilities can co-exist with most wildlife as long as sufficient water, food, cover and space are provided for the animals. This can be accomplished through development and implementation of a wildlife mitigation plan.

Critical valued wildlife use areas routinely evidence unusually high concentrations of wildlife. Such areas are deemed to be "sensitive" and necessary to sustain the existence and perpetuations of one or more species during crucial time periods in their life cycles. Biological intricacies dictate that significant disturbances cannot be tolerated by the members of an

ecological assemblage on critical valued sites. Professional opinion is that disturbance to critical use areas or habitats will result in unacceptable changes in biota and/or biological productivity of an area. All stream sections, lakes, reservoirs or ponds identified by Utah Division of Wildlife Resources as Class 1 or 2 are ranked as being of critical value. One for one in kind mitigation is expected for impacts in critical areas.

High priority valued wildlife use areas often times experience "intensive use" by one or more species of wildlife. This may occur during crucial time periods in their life cycles. All stream sections, lakes, reservoirs or ponds identified by Utah Division of Wildlife Resources as Class 3 are ranked as being of high priority value. Disturbance to high priority use areas is unreasonable without acceptable mitigation.

Substantial valued wildlife use areas are an "existence" or distribution area for one or more species of wildlife. All stream sections, lakes, reservoirs or ponds identified by Utah Division of Wildlife Resources as Class 4 are ranked as being of substantial value. Disturbance to such areas may require mitigation beyond the mere obligation of reclamation.

Limited valued wildlife use areas are "inhabited occasionally" by one or more species of wildlife. All stream sections, lakes, reservoirs or ponds identified by Utah Division of Wildlife Resources as Class 5 or 6 are ranked as being of limited value. Disturbance to these areas seldom require mitigation beyond reclamation.

Wildlife Use Area

Aquatic Use Areas and High Interest Species

Drainages on the project area are all intermittent. It is only after 8 miles of dry wash that they would reach the perennial flow of the Price River. The Price River, after flowing over 90 miles, discharges into the

Green River. It is important to note that no species of fish inhabit the mine plan or adjacent areas. The endangered humpback chub, bonytail chub and Colorado squawfish inhabit the Green River. Additionally, the razorback sucker, a rare species that may someday be listed as threatened, also inhabits the Green River.

Terrestrial Use Areas and High Interest Species

Seeps and springs, natural water tanks, stock ponds or other manmade watering facilities are not known to exist on the project area. Regardless, all environmentally free water represents a critical valued resource for most wildlife associated with the area.

Five species of amphibians, all of which are protected, are believed to inhabit the environs that surround the project area (Appendix A). Due to the arid nature of the loadout area, none are expected to inhabit it. Note that no amphibians in Utah have relative abundances so low as to have caused them to be federally listed as threatened or endangered.

Sixteen species of reptiles, all of which are protected, are believed to inhabit the project area (Appendix A). The following synopsis portrays the life requisites of just high interest reptiles. No reptiles have relative abundance so low as to have caused them to be federally listed as threatened or endangered.

The milk snake is a yearlong resident of the project area. Its substantial valued use area encompasses all ecosystems except the alpine. The milk snake is primarily subterranean and extremely secretive. When active it is mostly nocturnal. The milk snake feeds on small rodents, lizards and other small snakes. Occasionally, the milk snake may take small birds or bird eggs.

The milk snake may live beyond twenty years and it becomes sexually mature during its third spring season. After mating, which occurs during spring or early summer when they are leaving the den, female milk snakes produce clutches

which average seven eggs. The eggs are secreted in a moist warm environ and then abandoned; incubation lasts 65 to 85 days. The site where an individual snake has deposited its clutch of eggs is of critical value to maintenance of the species.

The Utah mountain kingsnake is a yearlong resident of the project area. Its substantial valued use area encompasses all of the projects ecosystems. Little is known concerning this animal except that it frequents areas of dense vegetation and that it is often found near water. Its life history and food habits parallel that described for the Utah milk snake.

To date snake dens, which are protected and of critical value to snake populations, have not been identified on or adjacent to the project area. It is important to note that inventory for such has not been attempted.

One hundred one species of birds, all of which are protected, are believed to inhabit the project area. All avifauna are protected. The following synopsis portrays life requisites for just high interest birds (Appendix A). Two species (bald eagle and peregrine falcon) are federally listed as endangered and are specifically discussed.

The project and adjacent areas provides substantial valued habitat for a multitude of raptors--turkey vulture, bald and golden eagles, four species of falcons (prairie, American peregrine, Merlin and American kestrel), five species of hawks (red-tailed, Swainson's, rough-legged, Ferruginous and marsh hawks) and four species of owls (screech, great horned, pygmy, and long-eared owls).

Nesting habitat does not exist on the project area for some of these species. However, if a species were to nest, a crucial time period is when the aerie (nest) is occupied. This varies per species but lies between February and mid-August. Generally speaking, aeries represent a critical valued site and need protection from disturbance within a one-half mile

radius. Species specific protective stipulations for aeries are available from the Utah Division of Wildlife Resources and the U.S. Fish and Wildlife Service.

Golden eagles are a common yearlong resident of the project area. An aerie territory is utilized by one pair of eagles but may contain several nest sites. No eagle aerie territories are known on the project area.

An active golden eagle nest site is sensitive to disturbance within a one-half mile radius. This buffer zone is ranked as being of critical value to maintenance of the eagle population. Occupancy by the birds is normally between February 1 and July 15. The radius for a buffer zone may need to be increased to one mile if a disturbance were to originate from above and within direct line of sight to the eagle aerie.

The bald eagle is endangered and a winter resident (October through April) of the local area--bald eagles do not nest within the biogeographic area that encompasses the project. To date there are no known high-priority concentration areas or critical valued roost trees for this species on or adjacent to the project. The project area, due to annual use by bald eagles, has been raked as being of substantial value.

Peregrine falcons (federally listed as endangered) and the prairie falcon (relative abundance is common) are yearlong residents of the project and adjacent areas. The American peregrine nests in southeastern Utah where as the Arctic peregrine is only a winter resident. Peregrine and prairie falcons utilize cliff nesting sites. There are no known aerie sites for peregrines or prairie falcons on the project site.

For each falcon their aerie site while being utilized and a one-half mile radius would be ranked as being of critical value to maintenance of their populations. The falcon's period of use at the aerie site spans the spring

and early summer period--prairie falcon, April 15 to June 30; peregrine falcon, March 1 to June 30.

Mourning doves inhabit the project and adjacent areas between May and mid-September each year. They nest throughout most of this period and each pair produces two clutches. The pinion-juniper and riparian ecosystems are ranked as being of high-priority value for nesting. Locally, mourning doves show two peaks in on-nest activity--early July and early August. Successful nesting activities and any water sources are critical to maintenance of the mourning dove population.

The western bluebird is an uncommon summer resident known to inhabit the environs of the biogeographic area that surrounds the project site. It is a cavity nesting specie and nests from the pinion-juniper up into the lower forest habitats of the montane. During winter western bluebirds show elevational and longitudinal migrations; they then utilize all ecosystems associated with the project. It is important to note that trees with cavities located on the project area can be of critical value when utilized by bluebirds.

Fifty-one species of mammals, of which 90 percent are protected, are believed to inhabit the project area (Appendix A). The following synopsis portrays life requisites for just high interest mammals. Only the black-footed ferret has been federally listed as endangered. It will be specifically discussed.

The red bat is a summer resident having a limited distribution within the biogeographic area that surrounds the project site. The animal roosts in riparian and pinion-juniper ecosystems. Such areas represent this animals substantial valued use area. An occasional individual has been known to utilize caves; those individuals could hibernate and remain over winter.

The spotted bat may inhabit the environs of the project area but little is known concerning this specie.

The cottontail rabbit (mountain cottontail inhabits sites lying between 7,000 and 9,000 feet in elevation and the desert cottontail inhabits sites lower than 7,000 feet in elevation) is a yearlong resident of the biogeographic area that surrounds the project site. The entire project area represents a substantial valued use area for cottontails. Their young are born between April and July. This is a crucial period for maintenance of the cottontail population.

The red and gray fox are yearlong inhabitants of the biogeographic area that surrounds the project site. They are pursued due to their fur value. The substantial valued use area for fox would include all ecosystems associated with the project. Locally, almost nothing is known of foxes population dynamics. Without doubt a crucial period for the fox is when they are caring for young in the den. Dens, while being inhabited, are a critical use area.

Many of the members of the family mustelidae are known to inhabit the biogeographic area that surrounds the project site. They are all protected and classified as furbearers--badger, striped and spotted skunks. All of these species are pursued by sportsmen due to their value in the fur market.

The substantial valued use area for badger and skunks spans all ecosystems other than dense forests. Skunks show some affinity for habitats proximal to water, and both species are dependent upon a suitable prey source.

A crucial period for maintenance of all furbearers populations is when they have young in a nest or den. Such sites are critical for reproductive success.

Bobcat, Canada lynx and cougar are known to inhabit the biogeographic area that surrounds the project site. For all of these species a crucial

period for maintenance of their population is when the female has her young secreted at a den site. Such sites are of critical value when being utilized. It is also important that a female accompanied by young not be killed or harassed.

The substantial valued use area for bobcats extends from the cold desert through the submontane and into the montane. The bobcat is normally associated with precipitous terrain, but has been observed in every ecosystem within the aforementioned ecological settings. Their primary prey source is represented by small mammals and birds or any other animal they can catch. It is important to note that bobcats occasionally do kill the young of big game animals.

The substantial valued use area for the Canada lynx is restricted to the montane. Normally, this cat would be expected to only utilize riparian and forested ecosystems. The lynx is similar in predation habits to the bobcat.

The substantial valued use area for the cougar (locally known as mountain lion) generally extends from the submontane into the montane. Due to the dependency of the cougar upon mule deer as a prey source, a ranking of the lion's seasonal distribution parallels that of the deer. This predator/prey relationship results in cougar utilizing environs of the cold desert, also.

Mule deer are inhabitants of the biogeographic area that surrounds the project site. Their substantial valued use area spans all ecosystems extending from the cold desert through the submontane and montane. In some situations deer show altitudinal migrations in response to winter conditions. There are, however, habitats where deer reside on a yearlong basis.

Migration of mule deer from summer range to winter range is initiated during late October. Probably, the annual disturbance of the fall hunting season coupled with changing weather conditions is the initial stimulus. The onset of winter weather reinforces the deer's urge to migrate and continued adverse weather keeps the deer on the winter range.

the animal. These areas are usually inhabited from December through April each year and during years with severe snow conditions portions of the winter range becomes unavailable to deer due to snow depth. On an annual basis, some restricted portions of the winter range have shown concentrated use by the deer; these areas are ranked as being of critical value. Critical valued sites must be protected from man's disturbance when the deer are physically present on the range.

Deer begin their migration back to summer range by May and remain there throughout summer and fall. Summer ranges are ranked as being of high-priority value to mule deer.

Mule deer fawn during the month of June--peak fawning occurs around June 20. The continuum of wildlife ecosystems extending from the pinion-juniper through the shrubland and into the aspen type probably represents the fawning area. All riparian areas are of critical value for fawning and maintenance of the deer population. To date specific areas showing annual use for fawning have not been inventoried. It is probable that such areas exist; they would be ranked as being of critical value to deer. It is important to note that June 15 through July 5 represents a crucial period for parturition.

Rocky mountain elk are inhabitants of the biogeographic area that surrounds the project site. Their substantial valued use area spans all ecosystems extending from the submontane through the montane. Elk do not show as strong altitudinal migration as mule deer do in response to winter conditions, but they do migrate to wintering areas.

Migration of elk from summer range to winter range is initiated during late October. Probably, the annual disturbance of the fall hunting seasons coupled with changing weather conditions is the initial stimulus. The onset of winter weather reinforces the elk's urge to migrate and continued adverse

coupled with changing weather conditions is the initial stimulus. The onset of winter weather reinforces the elk's urge to migrate and continued adverse weather keeps elk on the winter range.

A portion of the project site represents winter range for the Manti elk herd. Winter ranges for elk are all ranked as being of high-priority value to the animal. These areas are usually inhabited from December through April each year. During winters with severe conditions, some portions of the winter range becomes unavailable to elk due to snow depth. Traditionally, some restricted portions of the winter range have shown concentrated use by the elk; these sites are ranked as being of critical value. Critical valued sites must be protected from man's disturbance when the elk are physically present on the range.

Elk begin their migration back to summer range by May and remain there throughout summer and fall. Summer ranges are ranked as being of high-priority value.

Currently, there are no other known high interest wildlife species or their habitat use areas on or adjacent to the project area. It is not unreasonable to suspect that in the future, some additional species of wildlife may become of high interest to the local area, Utah or the Nation. If such is the case, the required periodic updates of project permits and reclamation plans can be adjusted and appropriate recommendations made.

RECOMMENDED FISH AND WILDLIFE MITIGATION PLAN

Andalex Resources Inc. - Tower Division

(Wildcat Coal Loadout)

Mitigation and Impact Avoidance Procedures General to All Wildlife

Wildlife use areas have been ranked into four levels of biological importance. The most valued are the critical areas followed in respective importance by high-priority, substantial and limited valued areas. Impacts to any of these areas requires various levels of mitigation. At a minimum, any project resulting in disturbance to wildland habitats must provide interim revegetation and plans for final reclamation/revegetation. Interim revegetation should target stabilization of top soil storage sties and other raw soil areas. Forage values to wildlife of the seed prescription should be an important issue where wildlife can utilize interim plantings. Final reclamation must consider life requisites (food, water, cover and space) of high interest wildlife that would utilize the area.

Where practicable disturbances to vegetation communities should be kept to a minimum and planned to create irregular edges rather than long smooth edges. Facility placement must incorporate cluster designs and safe corridors for large animal movement. Mining operations should develop as much facility area underground as reasonable.

During the interim of project activities, all hazards to wildlife (i.e., vertical vent shafts, hazardous chemicals, liquid hydrocarbons, etc.) need to

be modified to preclude animal use. Persistent pesticides should not be used.

It is recommended that the company make significant efforts to educate all employees associated with the project of intrinsic values of the wildlife resource. The company has legal and moral obligations to protect the environment; the employee must share in this responsibility.

In order to meet this objective the Division of Wildlife Resources has developed a "Coal Mining and Wildlife" training program that is available for company use. Personnel associated with the project should be advised not to unnecessarily or without proper permits harass or take any wildlife. Young animals or females with young are frequently victims of accidental discovery and harassment or capture. Additionally, personnel traveling to and from the project should not stop their vehicles for purposes of viewing wildlife at short distances. Moving traffic is less disturbing to the animals than traffic that stops and/or results in out-of-the vehicle activity. When the viewing of wildlife is desirable, vehicles should only be slowed, but not stopped. It is especially important that wildlife not be harassed during winter periods, breeding seasons and early in the rearing process.

Exploratory drilling should be limited as much as possible during crucial periods. During winter wildlife are always in a depleted condition. Unnecessary disturbance by man causes them to use up valuable and limited energy reserves which, often times, results in mortality. In less severe cases, the fetus being carried by females may be aborted or absorbed by the animal, thus reducing reproductive success of a population. During breeding seasons, disturbance by man can negatively affect the number of breeding territories for some species of wildlife. Disturbance can also interrupt courtship displays and preclude timely interactions between breeding animals. This could result in reduced reproductive success and ultimate reductions in population levels. And, early in the rearing process, young animals need the

peace and tranquility normally afforded by remote or secluded wildfire. It is also during this crucial period that young animals gain the strength and ability to elude man and other predators. This allows the young animal to develop in relatively unstressed situations and to utilize habitats that are secure from predators. Disturbance by man can compromise this situation and result in abandonment of the young by the female, increased accidents that result in mortality to young animals or increased natural predation.

Hunting and other state and federal wildlife regulations must be adhered to by sportsmen utilizing the project area. Apprehension of wildlife violators has increased by nearly 250 percent during recent years in southeastern Utah.

Mitigation and Impact Avoidance Procedures for Aquatic Wildlife

If ultimate operations are planned or occur that could physically or chemically impact any drainage channel or marshland, detailed reclamation plans along with appropriate state ("Application to Alter a Natural Stream" administered by the Division of Water Rights) and/or federal ("404 permit" administered by Army Corps of Engineers) permits will be required. Where flows will be altered, instream flow needs of fisheries, benthos and channel/habitat maintenance needs to be determined through an acceptable methodology. Also, consumptive uses of water resulting in depleted flows within the Colorado River basin will impact endangered fish species necessitating consultation with the U.S. Fish and Wildlife Service.

Crossing culverts must be installed with gradients less than 0.5 percent and must have a natural bottom and/or devices for reducing stream velocity so that fish migration is not inhibited. Bridge design must consider fish passage needs and riparian habitat protection--clear span bridges are recommended. A reclamation plan for a stream or lake would necessitate high level studies providing for measurement of the physical and chemical characters of the water

channel morphology or lake bottom/shoreline characteristics prior to disturbance.

Adequate precautions must be taken to keep all forms of coal or other sediments contained. They must not be inadvertently deposited in locations where the material could be transported during a precipitation event into a perennial stream. This would include "blow-coal" as fugitive dust from conveyance systems, haulage trucks, railroads or storage piles. Control of larger coal particles from the above sources is equally important. If needed, haulage vessels or storage sites should be covered, or the surface of the coal appropriately sprayed in order to solidify it against wind movement. The impacts of coal or other sediments on aquatic ecosystems are many and varied. Therefore, sediments must be kept out of those systems.

Mitigation and Impact Avoidance Procedures for Terrestrial Habitats

It is recommended that all marshland and riparian ecosystems be maintained or enhanced. A State goal is avoidance of a net loss of these highly productive and unique habitats. All impacts will require mitigation that results in replacement by creation of new habitat. Roads crossing through those areas should do so in a manner that is least damaging to the habitat. Marshlands and riparian ecosystems are ranked as being of critical value and are the most productive sites in terms of herbage and biota produced as compared to other local habitat types. It is probable that a majority of the vertebrate wildlife that inhabit the project area make some use of riparian or marshland areas.

It is important to note that roads and other surface facilities to be constructed should as far as practicable be sited where they will not compromise wildlife or their use areas. Also, surface facilities, including

roads, should be screened if possible from wildlife use areas by vegetation or terrain.

In situations where wildland habitats have been or will be disturbed, reclamation is required. Also, there are sites where development or enhancement of wildland habitats through vegetation treatments and/or seedings or transplants of seedlings could benefit wildlife. Seedings should take place in the fall after a permanent killing frost has occurred. Seedling transplants should occur in the spring just after snow melt in order to best advantage local soil moisture conditions.

Temporary control of rodents may be required to ensure a successful rangeland treatment. It is recommended that the State Department of Agriculture be consulted in this area of concern. Poisoned oats are the most common and acceptable method for rodent control; however, only licensed persons may apply the treatment.

Currently, there are some new concepts in methodology for revegetation that are being successfully implemented in other parts of the nation and world. One promising method is a procedure where a large scoop removes, from a natural and stabilized site, a small area of earth intact with vegetation and subsurface soils for placement on a site to be restored. This same procedure can be utilized when disturbing pristine sites, except that the native vegetation is stored for use in latent reclamation. Another meritorious method for stimulating natural revegetation, in combination with other reclamation techniques, is to plan facility developments so that islands of natural, native vegetation remain. This will allow for natural vegetation to spread from the islands. These techniques can also be useful for enhancement of poor quality sites that currently exist on the mine plan area.

There are also new specialized techniques coming to the forefront for stabilization of problem sites such as roadbanks and steep slopes. It is

important that these sites be promptly and permanently revegetated in order to reduce siltation into local hydric ecosystems. This will lessen damage to aquatic wildlife populations and habitats from siltation.

As a service and also to ensure that the needs of wildlife are met, the various expertism within the Division of Wildlife Resources are available to the company for consultation. For the most part, Larry Dalton, Resource Analyst, for the Southeastern Regional office at 455 West Railroad Avenue in Price, Utah 84501 (phone 801-637-3310) will coordinate any needed contacts. Richard Stevens, Wildlife Biologist, at the Great Basin Research Center, Box 704, in Ephraim, Utah 84627 (phone 801-283-4441) is available for consultation and site specific analysis concerning species for vegetation plantings, timing and technique to achieve the best results.

In instances where revegetation projects are to be planned over refuse areas, heavy metal uptake by the plants must be evaluated. It is recommended that the company initiate an appropriate long-term monitoring program to determine the magnitude and resolutions, if needed, for this problem.

Mitigation and Impact Avoidance Procedures for Amphibians and Reptiles

Enhancement or development of habitats that provides a diversity of vegetation will benefit amphibians and reptiles. It is important to note that all of these species are protected by Utah law. Due to the myriad of myths that surround these animals, it is urged that individual specimens not be destroyed. This is especially true for snakes since they are a valuable component of the ecosystem.

Snake dens are ranked as being of critical value to the population and are protected by law. If a den is located, it should be reported to the Utah Division of Wildlife Resources. Snake dens can be moved, but only with intensive efforts that may take a year or more (snakes are caught and removed

in the spring and fall). Thus, construction of facility developments may take place in denning locations if there is sufficient lead time to relocate the occupants.

Mitigation and Impact Avoidance Procedures for Avifauna

It is recognizable that development and operation of a mining project will in some cases negatively impact many avian species. Physical destruction of habitats and continual disturbance that makes other habitats unavailable or less desirable to an individual bird are typical. It is also true that impacts that are negative to one specie may be beneficial to another specie. It is recommended that the Company plant native and/or exotic (ornamental species are acceptable) berry producing shrubs and other desirable seed producing plants around surface facilities. This will provide food and cover for many of the smaller species of birds, resulting in enhancement of their substantial and high-priority valued habitats. This action would also mitigate for disturbances and destruction of avifauna habitats at other sites associated with project operations.

It is important to note that the nests of all avifauna when active and their eggs are protected by federal (Federal Migratory Bird Treat Act) or state laws (Utah Code 23-17-1 and 23-17-2). Note that raptor stick nests are protected regardless of being actively occupied or not. All avifauna utilize a nest during their reproductive process. Dependent upon the species, some nests are well developed while others may be represented by only a scrape on the ground. These sites when being utilized are critical to maintenance of individual bird populations. Each of the species has a specific crucial time period in which their nest would be occupied. It is during this crucial period that the nest must be protected from disturbance.

Riparian and marshland areas need to have complete protection from

disturbance between mid-March and mid-June due to the crucial spring migration and nesting season of waterfowl. Disturbance should be significantly limited from mid-June through mid-October in order to protect the high-priority habitat values for brooding, moulting and fall migration of waterfowl.

Several species of raptors frequent the project area. Their nests when active should not be disturbed, and abandoned stick nests are never to be damaged. Every effort should be made to eliminate man's disturbance within visual sight or one-half mile radius of an active raptor nest. Termination of man's use of a site would not be required where eagles or falcons constructed their nest after mining had been initiated. This would demonstrate an individual bird's willingness to tolerate mining activities and the associated disturbance by man.

Roost trees for bald eagles, if located, must not be disturbed or destroyed. Similarly, activities planned for high-priority concentration areas of bald eagles must be designed and implemented so that they are not of significant disturbance to the birds.

As a general comment, whenever active raptor nests are observed or roost trees for bald eagles located, they need to be reported to the Utah Division of Wildlife Resources and the U.S. Fish and Wildlife Service.

All electrical power line support towers and other transmission facilities must be designed to safeguard birds. The guidelines set forth in "Environmental Criteria for Electric Transmission System" published by the USDA and USDI in 1970 and/or the REA Bulletin 61-10 "Powerline Contacts by Eagles and Other Large Birds" are available for company review. It is also recommended that placement of utility poles over flat or rolling terrain be planned so that they are out of view of roads or at least one-quarter mile away from any roads. This will lessen opportunity for illegal killing ("plinking") of these valuable birds. Note that the poles can serve as

suitable hunting perches for raptors. In some instances poles can result in an extension of raptor hunting territories, which would represent a beneficial impact.

During the crucial period of December through February, spruce-fir forests and aspen forests need to be protected from man's disturbance so that blue grouse and ruffed grouse will not be impacted. Destruction of these wildlife habitats at any time of the year need be minimized due to their value to wildlife.

During the spring period (mid-March through mid-June) care needs to be taken that male blue grouse are not disturbed or precluded from establishing breeding territories. Similar precautions need be taken for male ruffed grouse (March through May) in the area of drumming logs.

Mature trees with natural cavities and dead snags need to be protected for use by cavity nesting birds. Trees with such a character are ranked as being of critical value to cavity nesting birds. The project should be planned so that along lake and stream margins or within 500 feet of forest openings three cavity/snag trees per acre are left standing. In dense forested areas two cavity/snag trees per acre must be retained.

Mitigation and Impact Avoidance Procedures for Mammals

The lodges, nests and dens of all mammals or roosts in the instance of bat-like mammals must be protected and represent a critical use area. A crucial period for the aforementioned sites is when they are occupied. Additionally, many species of mammals develop food caches in order to carry individual animals or family groups through periods when they cannot forage. Such sites are of critical value to maintenance of their populations and if located should not be destroyed or subjected to regular disturbance by man.

It is important to realize that within natural ecosystems there exists a

predator-prey relationship. One species of animal may represent a prey source for other species. Therefore, it is important that project operations be designed and implemented so as to not unnecessarily disturb wildlife. Special attention needs to be made to minimize destruction of their habitats.

Haulage of coal between the various mine projects and distribution points should be planned so that impacts to wildlife are lessened. Special concern is elicited by haulage of coal through wintering or other concentration areas for big game. It is recommended that the Company cause coal haulage personnel to use extreme caution so that accidental collisions between motor vehicles and big game are reduced. Without doubt, a reduction in speed would alleviate this problem.

At present the most successful and cost effective technique for reducing deer-highway mortality is a system of warning reflectors. This system (manufactured by Strieter Corporation, 2100 Eighteenth Avenue, Rock Island, Illinois 61201 and known as "Swareflex") is only of value at night time. But, it is during darkness that 90% of deer-highway mortality occurs. Strieter Corporation describes the effect of the reflector system as follows:

> "The headlights of approaching vehicles strike the wildlife reflectors which are installed on both sides of the road. Unnoticeable to the driver, these reflect red lights into the adjoining terrain and an optical warning fence is produced. Any approaching wildlife is alerted and stops or returns to the safety of the countryside. Immediately after the vehicle has passed, the reflectors become inactive, thereby permitting the animals to cross safely".

Installation of a wildlife warning reflector system, a reduction in speed of coal-haulage trucks or other mine related traffic, and increased awareness of wildlife values by mine associated employees should result in a reduction of deer-highway mortality problems.

In instances where conveyors, slurry lines or other linear, above-ground structures having potential to be a barrier to big game

movement are to be developed, uninhibited passage opportunity must be provided. Passage opportunity must be provided within reasonable distance of any point where animals encounter the structure. A combination of passage modes is most practicable. A majority length of the structure should be either sufficiently elevated for underpassage or lowered so that animals can jump over. Then strategically located passage structures (sags represented by buried segments, humps represented by elevated segments or overpass ramps) should be placed in areas that remain a barrier.

Underpassage opportunities for animals, including humps, must consider behavior of the target animal species, snow accumulation and vegetation growth as it may influence the passage window. Suggested clearances are as follows

(Note, that the greatest clearance is recommended where snow accumulation is a factor): elk, 5.9 to 9.8 feet; deer, 1.6 to 3.3 feet; moose, heights exceeding 5.9 feet; wild sheep, (Ovis spp.), 4.9 to 7.8 feet; bison, heights exceeding 6.8 feet.

Humps or sags should extend along the structure as far as possible and overpass ramps should be designed as circular natural appearing mounds bisected by the structure. Width requirements probably vary with species, but 10 feet is recommended and side slopes could vary from 20% to 80%, since big game typically negotiate similar natural conditions.

Regardless of passage mode, consideration must be given to development of acceptable habitat on either side of the structure. This will enhance the probability that animals will make use of the crossing opportunity.

APPENDIX G

GARLEY CANYON SPRING

WATER RIGHTS/ANALYSES

STATE OF UTAH
NATURAL RESOURCES
Water Rights

538 West North Temple • Salt Lake City, UT 84116 • 801-533-6071

Form 33

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dee C. Hansen, State Engineer

September 28, 1984

Tower Resources Inc.
P.O. Box 902
Price, UT 84501

Dear Applicant:

RE: APPROVED APPLICATION
NUMBER 91-4303 (A59754)

Enclosed is a copy of the above-numbered approved Application. This is your authority to proceed with actual construction work which, under Sections 73-3-10 and 73-3-12, Utah Code Annotated, 1953, as amended, must be diligently prosecuted to completion. The water must be put to beneficial use and proof of appropriation be made to the State Engineer on or before the proof due date shown below otherwise, the application will be lapsed.

*** PROOF DUE DATE: February 28, 1988 ***

Proof of Appropriation is evidence to the State Engineer that the water has been placed to its full intended beneficial use. By law, it must be prepared by a registered engineer or land surveyor, who will certify to the location and the uses for the water. Your proof of appropriation will become the basis for the extent of your water right.

Failure on your part to comply with the requirements of the statutes may result in the forfeiture of this application.

Yours truly,

Dee C. Hansen

Dee C. Hansen, P.E.
State Engineer

Enclosure: Copy of Approved Application

Received
OCT 1 1984
Tower Resources Inc.

Form 37 7M 12-70 Application No. [illegible]

APPLICATION TO APPROPRIATE WATER
STATE OF UTAH

91-4303

NOTE:—The information given in the following blanks should be free from explanatory matter, but when necessary, a complete supplementary statement should be made on the following page under the heading "Explanatory."

MAR 0

For the purpose of acquiring the right to use a portion of the unappropriated water of the State of Utah, for uses indicated by (X) in the proper box or boxes, application is hereby made to the State Engineer, based upon the following showing of facts, submitted in accordance with the requirements of the Laws of Utah.

1. Irrigation ☐ Domestic ☐ Stockwatering ☐ Municipal ☐ Power ☐ Mining ☐ Other Uses ☒
2. The name of the applicant is Tower Resources, Inc.
3. The Post Office address of the applicant is P. O. Box 902, Price, Utah 84501
4. The quantity of water to be appropriated 0.1 second-feet and/or _____ acre-feet
5. The water is to be used for Dust Suppression (Major Purpose) from Jan. 1 (Month) (Day) to Dec. 31 (Month) (Day)

   other use period _____ (Minor Purpose) from _____ (Month) (Day) to _____ (Month) (Day)

   and stored each year (if stored) from Jan. 1 (Month) (Day) to Dec. 31 (Month) (Day)
6. The drainage area to which the direct source of supply belongs is _____ (Leave Blank)
7. The direct source of supply is* a spring (Name of stream or other source)

   which is tributary to Garley Canyon Stream, tributary to Price River

*Note.—Where water is to be diverted from a well, a tunnel, or drain, the source should be designated as "Underground Water" in the first space and the remaining spaces should be left blank. If the source is a stream, a spring, a spring area, or a drain, so indicate in the first space, giving its name, if named, and in the remaining spaces, designate the stream channels to which it is tributary, even though the water may sink, evaporate, or be diverted before reaching said channels. If water from a spring flows in a natural surface channel before being diverted, the direct source should be designated as a stream and not a spring.

8. The point of diversion from the source is in Carbon County, situated at a point* 4870 feet west and 1410 feet south of the Northeast Corner of Section 4, Township 14 South, Range 9 East, SLBM. See Map

   (6½ miles NW of Price) Standardville Quad.

*Note.—The point of diversion must be located definitely by course and distance or by giving the distances north or south, and east or west with reference to a United States land survey corner or United States mineral monument, if within a distance of six miles of either, or if at a greater distance, to some prominent and permanent natural object. No application will be received for filing in which the point of diversion is not defined definitely.

9. The diverting and carrying works will consist of a catch basin and a 2" pipeline for approximately ¼ mile (with pump)
10. If water is to be stored, give capacity of reservoir in acre-feet _____ height of dam _____ area inundated in acres _____ legal subdivision of area inundated _____

    Water may be stored in a steel or fiberglass tank (5000 gal.)
11. If application is for irrigation purposes, the legal subdivisions of the area irrigated are as follows:

    N/A

    Total _____ Acres
12. Is the land owned by the applicant? Yes _____ No X If "No," explain on page 2.
13. Is this water to be used supplementally with other water rights? Yes _____ No X

    If "yes," identify other water rights on page 2.
14. If application is for power purposes, describe type of plant, size and rated capacity. N/A
15. If application is for mining, the water will be used in N/A Mining District at the _____ mine, where the following ores are mined _____
16. If application is for stockwatering purposes, number and kind of stock watered N/A
17. If application is for domestic purposes, number of persons N/A, or families _____
18. If application is for municipal purposes, name of municipality N/A
19. If application is for other uses, include general description of proposed uses Primarily for dust suppression at a unit train coal loading facility
20. Give place of use by legal subdivision of the United States Land Survey for all uses described in paragraphs 14 to 19, incl. west one-half, section 33, Township 13 South, Range 9 East
21. The use of water as set forth in this application will consume 0.1 second-feet and/or acre-feet of water and all unused water second feet and/or acre feet will be returned to the natural stream or source at a point described as follows: The same as the point of diversion.

MICROFILMED

EXPLANATORY

The following additional facts are set forth in order to define more clearly the full purpose of the proposed application:

Regarding question 12, the land is not owned by Tower Resources, it is owned by the Bureau of Land Management. However, this diversion point is located within a lease on this land controlled by Tower

(Use page 4 if additional explanatory is needed.)

The quantity of water sought to be appropriated is limited to that which can be beneficially used for the purpose herein described

T. R. Resources Inc By [signature]

Signature of Applicant*

*If applicant is a corporation or other organization, signature must be the name of such corporation or organization by its proper officer, or in the name of the partnership by one of the partners, and the names of the other partners shall be listed. If a corporation or partnership, the affidavit below need not be filled in. If there is more than one applicant, a power of attorney, authorizing one to act for all, should accompany the Application.

DECLARATION OF CITIZENSHIP

STATE OF UTAH, County of [illegible] } ss

On the [illegible] day of [illegible], 19[illegible], personally appeared before me, a notary public for the State of Utah, the above applicant who, on oath, declared that he is a citizen of the United States, or has declared his intention to become such a citizen.

My commission expires: [illegible]

(SEAL)

[signature]

Notary Public

FEES FOR APPLICATIONS TO APPROPRIATE WATER IN UTAH

Flow rate — c.f.s.	Cost	
0.0 to 0.1	$ 15.00	
over 0.1 to 0.5	30.00	
over 0.5 to 1.0	45.00	
over 1.0 to 15.0	45.00	plus $7.50 for each cfs above the first cubic foot per second.
over 15.0	150.00	

Storage — acre-feet		
0 to 20	22.50	
over 20 to 500	45.00	
over 500 to 7500	45.00	plus $7.50 for each 500 a.f. above the first 500 acre feet.
over 7500	150.00	

(This section is not to be filled in by applicant)

STATE ENGINEER'S ENDORSEMENTS

1. MARCH 9, 1984 Application received (by mail / over counter) in State Engineer's office by sp
2. ..... Priority of Application brought down to, on account of .....
3. 3-12-84 Application fee, $ 15.00, received by J.N. Rec. No. 04760
4. 3-22-84 Application microfilmed by MA Roll No. 1026-3
5. 3-12-84 Indexed by am Platted by .....
6. 3-9-84 Application examined by sp
7. ..... Application returned, ... or corrected by office .....
8. ..... Corrected Application resubmitted (by mail / over counter) to State Engineer's office.
9. 3-9-84 Application approved for advertisement by sp
10. MAR 30 1984 Notice to water users prepared by CW
11. APR 12 1984 Publication began; was completed APR 26 1984
    Notice published in Sun Advocate
12. 4-12-84 Proof slips checked by CW
13. ..... Application protested by .....
14. 6-4-84 Publisher paid by M.E.V. No. 031301
15. ..... Hearing held by .....
16. ..... Field examination by .....
17. 9-14-84 Application designated for (approval / rejection) 4056.
18. 9/28/84 Application copied or photostated by slm proofread by .....
19. 9/28/84 Application approved ~~rejected~~
20. Conditions:

    This Application is approved, subject to prior rights, as follows:

    a. Actual construction work shall be diligently prosecuted to completion.

    b. Proof of Appropriation shall be submitted to the State Engineer's office by 2/28/88

    c. .....

    Dee C. Hansen, P.E., State Engineer

21. ..... Time for making Proof of Appropriation extended to .....
22. ..... Proof of Appropriation submitted.
23. ..... Certificate of Appropriation, No. ....., issued

Application No. 59754

91 4112

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

x 1140, Huntington, Utah 84528 801-653-2314

Client: Tower Resources
P. O. Box 902
Price, Utah 84501

Sample ID: Garley

Lab. No. 5295
Date Rec'd 4-13-84
Date Sampled 4-13-84
Time Sampled

cidity	mg/l $CaCO_3$	Aluminum	mg/l
kalinity, Total	322 mg/l $CaCO_3$	Arsenic	mg/l
lkalinity, Bicarbonate	mg/l $CaCO_3$	Barium	mg/l
lkalinity, Carbonate	mg/l $CaCO_3$	Beryllium	mg/l
hloride	401 mg/l	Boron	mg/l
oliform, Fecal	MPN/100 ml	Cadmium	mg/l
oliform, Total	MPN/100 ml	Calcium	464 mg/l
onductivity	7500 umhos/cm	Chromium	mg/l
luoride	mg/l	Copper	mg/l
lardness, Total	mg/l $CaCO_3$	Iron	< 0.05 mg/l
n, Ammonia	mg/l	Lead	mg/l
gen, Nitrate	mg/l	Magnesium	549 mg/l
litrogen, Nitrite	mg/l	Manganese	mg/l
)il & Grease	mg/l	Mercury	ug/l
H	7.2 Units	Nickel	mg/l
hosphorus, Ortho	mg/l	Potassium	30 mg/l
hosphorus, Total	mg/l	Selenium	mg/l
olids, Total Dissolved	7850 mg/l	Silica	mg/l
olids, Total Suspended	14 mg/l	Sodium	1081 mg/l
ulfate	4600 mg/l	Vanadium	mg/l
ulfide	mg/l	Zinc	mg/l
urbidity	NTU		
ation, Total	116.16 meq/l		
nion, Total	113.53 meq/l		

Received
APR 17 1984
Tower Resources Inc.

Respectfully submitted 4-16-84

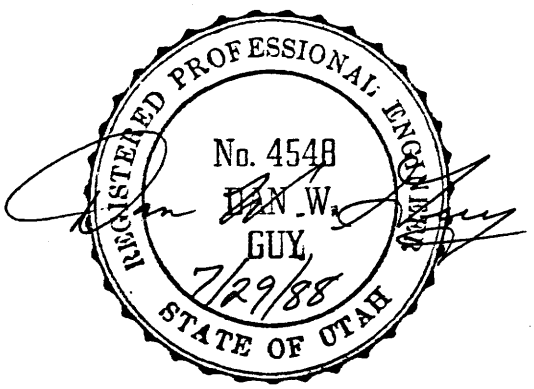
Certified Environmental Laboratory

APPENDIX H

SEDIMENT POND CERTIFICATIONS AND R-69 FORMS

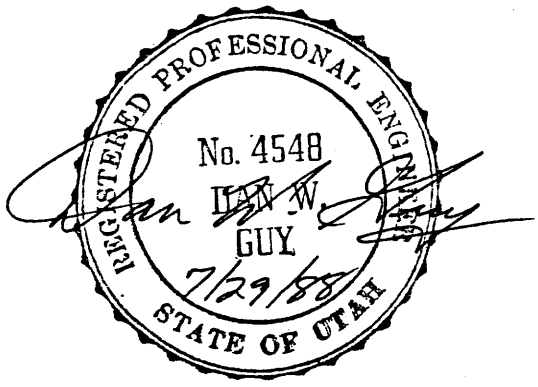
Certification of Sediment Pond "A"
Wildcat Loadout

I, Dan W. Guy, a registered professional engineer, State of Utah No. 4548, do hereby certify that the Sediment Control Pond "A" at the Wildcat Loadout has been constructed in accordance with the plan and design criteria set forth in the Permit Application Package and meets the required performance standards outlined in UMC 817.46.



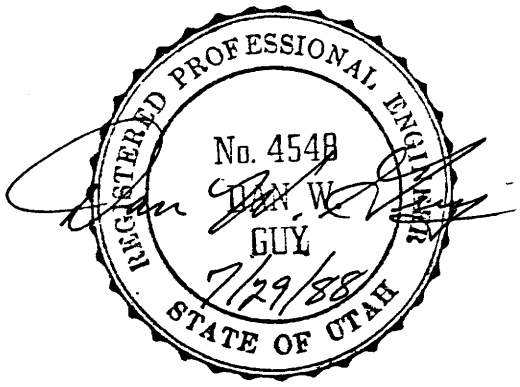
Certification of Sediment Pond "B"
Wildcat Loadout

I, Dan W. Guy, a registered professional engineer, State of Utah No. 4548, do hereby certify that the Sediment Control Pond "B" at the Wildcat Loadout has been constructed in accordance with the plan and design criteria set forth in the Permit Application Package and meets the required performance standards outlined in UMC 817.46.



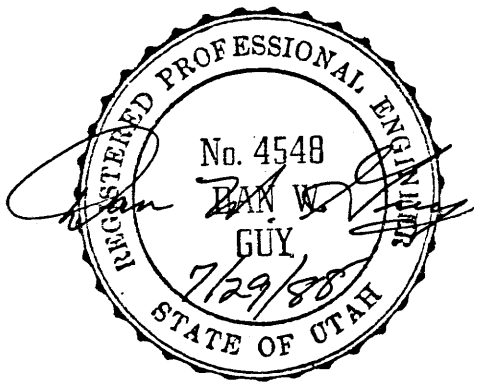
Certification of Sediment Pond "C"
Wildcat Loadout

I, Dan W. Guy, a registered professional engineer, State of Utah No. 4548, do hereby certify that the Sediment Control Pond "C" at the Wildcat Loadout has been constructed in accordance with the plan and design criteria set forth in the Permit Application Package and meets the required performance standards outlined in UMC 817.46.



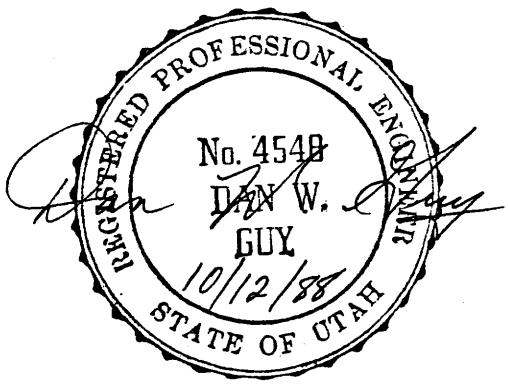
Certification of Sediment Pond "D"
Wildcat Loadout

I, Dan W. Guy, a registered professional engineer, State of Utah No. 4548, do hereby certify that the Sediment Control Pond "D" at the Wildcat Loadout has been constructed in accordance with the plan and design criteria set forth in the Permit Application Package and meets the required performance standards outlined in UMC 817.46.



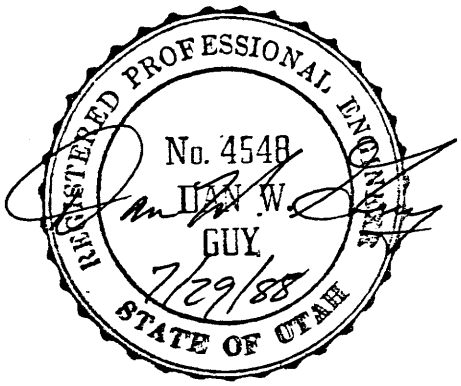
Certification of Sediment Pond "E"
Wildcat Loadout

I, Dan W. Guy, a registered professional engineer, State of Utah No. 4548, do hereby certify that the Sediment Control Pond "E" at the Wildcat Loadout has been constructed in accordance with the plan and design criteria set forth in the Permit Application Package and meets the required performance standards outlined in UMC 817.46, with the exception that the pond, as presently constructed, is of insufficient size to contain the calculated volume of runoff and sediment from the drainage area to the Pond from a 10 year - 24 hour storm event. The pond is therefore scheduled to be enlarged to accommodate the required volume of runoff.



Certification of Sediment Pond "F"
Wildcat Loadout

I, Dan W. Guy, a registered professional engineer, State of Utah No. 4548, do hereby certify that the Sediment Control Pond "F" at the Wildcat Loadout has been constructed in accordance with the plan and design criteria set forth in the Permit Application Package and meets the required performance standards outlined in UMC 817.46.



ANDALEX
RESOURCES, INC.
Tower Division

P.O. BOX 902
PRICE, UTAH 84501
PHONE (801) 637-5385
TELEX 381 530 ANDALEX PRIC

April 27, 1988

Mr. Robert L. Morgan, P.E.
State Engineer
Utah Division of Water Rights
1636 West North Temple
Suite 220
Salt Lake City, Utah 84116-3156

Re: Andalex Resources, Inc.
Wildcat Loadout
PRO/007/033, #2
Carbon County, Utah

Dear Mr. Morgan:

Enclosed are R-69 forms for each of our six sediment ponds at the Wildcat Loadout Facility, along with maps and a Pond Specification Summary.

The Wildcat Loadout Facility was constructed in 1985 and all ponds were placed at that time. Recent changes in the Surface Mining Regulations have brought this facility under the permitting requirements of the Division of Oil, Gas, and Mining.

The site is relatively flat, with an average slope of approximately 5%. As a result, the sediment ponds are mostly incised, with little (if any) of the "dam" above natural ground level.

The ponds are used only for sediment control for disturbed area runoff, and do not involve storage of water for any use other than settling and discharge, in accordance with an approved NPDES Discharge Permit. No water rights are involved or impacted by these ponds.

ANDALEX
RESOURCES, INC.
Tower Division

I hope this information is satisfactory. If you have any questions or need any further information, please let me know.

Sincerely,

Michael W. Glasson
Senior Geologist

MWG/as

Enclosures

cc: Mark Page, Price Area Engineer
File

FORM R-69
1/21/86

APPLICATION TO CONSTRUCT A DAM IMPOUNDING LESS THAN 20 ACRE-FEET

STATE OF UTAH

Application No. _____
Received _____
Entered _____

The following application is submitted, pursuant to Section 73-5-12 of the Utah Code Annotated 1953, to obtain the authority to build a dam which will create a reservoir impounding less than 20 acre-feet

1. APPLICANT INFORMATION

NAME Andalex Resources, Inc. Wildcat Loadout
ADDRESS P.O. Box 902
CITY Price COUNTY OF DAM Carbon
STATE Utah ZIP 84501

2. PURPOSE OF DAM

STOCK POND	____	REGULATING RES.	____	DIVERSION DAM	____
IRRIGATION	____	DEBRIS BASIN	____	FLOOD CONTROL	____
SEDIMENTATION	XXX	TAILINGS POND	____	RECREATION	____
OTHER (describe)	(Sediment Pond "A")				

3. LOCATION OF DAM

QUARTER/QUARTER (i.e. NESW) NWSE SECTION 33
TOWNSHIP 13 S. RANGE 9 E. BASE & MERIDIAN S.L.B.&M.

4. PROPOSED DAM

DAM HEIGHT (vertical distance)	9.5		FEET
CREST LENGTH (length of top of dam)	150		FEET
CREST WIDTH (width of top of dam)	15		FEET
UPSTREAM SLOPE 1 VERTICAL ON	3		HORIZONTAL
DOWNSTREAM SLOPE 1 VERTICAL ON	2		HORIZONTAL
WATER SURFACE AREA AT SPILLWAY CREST	0.66		ACRES
RESERVOIR CAPACITY AT SPILLWAY CREST	2.410		AC.FT.

TYPE OF DAM (i.e. earthfill, concrete, etc.,)
Earthfill (Pond mostly incised)

5. PROPOSED OUTLET

INSIDE DIAMETER 18 INCHES LENGTH 60 FEET
TYPE OF PIPE (i.e. concrete, steel, etc.,) Steel
TYPE OF GATE OR VALVE None (Inverted inlet)
LOCATION OF GATE (upstream, downstream, center, etc.,) ____
None

(OVER)

PROPOSED SPILLWAY

CREST LENGTH (width of bottom of spillway) 4 FEET
DEPTH (from bottom of spillway to top of dam) 1 FEET
TYPE (i.e. earth channel, pipe, etc.,) Earth channel

CONTROL (i.e. gates, flashboards, etc.,) None
(Emergency Spillway Only)

WATER RIGHTS

DESCRIBE (See Instructions) N/A

COMMENTS

This is a sediment control structure only. Runoff water is only stored for settling purposes and then may be discharged per an NPDES Permit.

PLANS

Attach any plans sketches or diagrams which will clarify the information given on this application. (See Attached Plate 3)

The undersigned acknowledge they have read the instructions included with this application, and are aware no construction is to begin until this application has been approved by the Utah State Engineer

4-27-88
Date

Signature of Applicant

Water Rights in Order By _____ Date _____
Area Engineer's Hazard Rating _____
Reviewed by Dam Safety By _____ Date _____
Comments _____

Date of Approval _____

Robert L. Morgan, P.E.
State Engineer

FORM R-69
1/21/86

APPLICATION TO CONSTRUCT A DAM IMPOUNDING LESS THAN 20 ACRE-FEET

STATE OF UTAH

Application No. _____
Received _____
Entered _____

The following application is submitted, pursuant to Section 73-5-12 of the Utah Code Annotated 1953, to obtain the authority to build a dam which will create a reservoir impounding less than 20 acre-feet

1. APPLICANT INFORMATION

NAME Andalex Resources, Inc. -- Wildcat Loadout
ADDRESS P.O. Box 902
CITY Price COUNTY OF DAM Carbon
STATE Utah ZIP 84501

2. PURPOSE OF DAM

STOCK POND	____	REGULATING RES.	____	DIVERSION DAM	____
IRRIGATION	____	DEBRIS BASIN	____	FLOOD CONTROL	____
SEDIMENTATION	XXX	TAILINGS POND	____	RECREATION	____
OTHER (describe)	(Sediment Pond "B")				

3. LOCATION OF DAM

QUARTER/QUARTER (i.e. NESW) NWSE SECTION 33
TOWNSHIP 13 S. RANGE 9 E. BASE & MERIDIAN S.L.B.&M.

4. PROPOSED DAM

DAM HEIGHT (vertical distance)	6.0	FEET	
CREST LENGTH (length of top of dam)	80	FEET	
CREST WIDTH (width of top of dam)	13	FEET	
UPSTREAM SLOPE 1 VERTICAL ON	5	HORIZONTAL	
DOWNSTREAM SLOPE 1 VERTICAL ON	2	HORIZONTAL	
WATER SURFACE AREA AT SPILLWAY CREST	0.13	ACRES	
RESERVOIR CAPACITY AT SPILLWAY CREST	0.310	AC.FT.	

TYPE OF DAM (i.e. earthfill, concrete, etc.,)
Earthfill (Pond mostly incised)

5. PROPOSED OUTLET

INSIDE DIAMETER 12 INCHES LENGTH 40 FEET
TYPE OF PIPE (i.e. concrete, steel, etc.,) Steel
TYPE OF GATE OR VALVE None (Inverted Inlet)
LOCATION OF GATE (upstream, downstream, center, etc.,) ____
None

(OVER)

PROPOSED SPILLWAY

CREST LENGTH (width of bottom of spillway) 4.0 FEET
DEPTH (from bottom of spillway to top of dam) 1.0 FEET
TYPE (i.e. earth channel, pipe, etc.,) Earth Channel

CONTROL (i.e. gates, flashboards, etc.,) None
(Emergency Spillway Only)

WATER RIGHTS

DESCRIBE (See Instructions) N/A

COMMENTS

This is a sediment control structure only. Runoff water is only stored for settling purposes and then may be discharged per an NPDES Permit.

PLANS

Attach any plans sketches or diagrams which will clarify the information given on this application. (See Attached Plate 4)

---

ne undersigned acknowledge they have read the instructions includ-
i with this application, and are aware no construction is to begin
ntil this application has been approved by the Utah State Engineer

4.27.88
Date

Michael D. Hansen
Signature of Applicant

Water Rights in Order By _____ Date _____
Area Engineer's Hazard Rating _____
Reviewed by Dam Safety By _____ Date _____
Comments _____

---

ate of Approval _____

Robert L. Morgan, P.E.
State Engineer

1/21/86

APPLICATION TO CONSTRUCT A DAM IMPOUNDING LESS THAN 20 ACRE-FEET

STATE OF UTAH

Application No. _____
Received _____
Entered _____

The following application is submitted, pursuant to Section 73-5-12 of the Utah Code Annotated 1953, to obtain the authority to build a dam which will create a reservoir impounding less than 20 acre-feet

1. APPLICANT INFORMATION

NAME Andalex Resources, Inc. - Wildcat Loadout
ADDRESS P.O. Box 902
CITY Price COUNTY OF DAM Carbon
STATE Utah ZIP 84501

2. PURPOSE OF DAM

STOCK POND		REGULATING RES.		DIVERSION DAM	
IRRIGATION		DEBRIS BASIN		FLOOD CONTROL	
SEDIMENTATION	XXX	TAILINGS POND		RECREATION	
OTHER (describe)	(Sediment Pond "C")				

3. LOCATION OF DAM

QUARTER/QUARTER (i.e. NESW) NWSE SECTION 33
TOWNSHIP 13 S. RANGE 9 E. BASE & MERIDIAN S.L.B.&M.

4. PROPOSED DAM

DAM HEIGHT (vertical distance)	13		FEET
CREST LENGTH (length of top of dam)	280		FEET
CREST WIDTH (width of top of dam)	26		FEET
UPSTREAM SLOPE 1	VERTICAL ON 3		HORIZONTAL
DOWNSTREAM SLOPE 1	VERTICAL ON 2		HORIZONTAL
WATER SURFACE AREA AT SPILLWAY CREST	0.86		ACRES
RESERVOIR CAPACITY AT SPILLWAY CREST	4.430		AC.FT.

TYPE OF DAM (i.e. earthfill, concrete, etc.,)
Earthfill (Pond mostly incised)

5. PROPOSED OUTLET

INSIDE DIAMETER 18 INCHES LENGTH 60 FEET
TYPE OF PIPE (i.e. concrete, steel, etc.,) Steel
TYPE OF GATE OR VALVE None (Inverted Inlet)
LOCATION OF GATE (upstream, downstream, center, etc.,)
None

(OVER)

PROPOSED SPILLWAY

CREST LENGTH (width of bottom of spillway) 18" Dia. FEET
DEPTH (from bottom of spillway to top of dam) 2.0 FEET
TYPE (i.e. earth channel, pipe, etc.,) Pipe

CONTROL (i.e. gates, flashboards, etc.,) None
(Emergency Spillway Only)

WATER RIGHTS

DESCRIBE (See Instructions) N/A

COMMENTS

This is a sediment control structure only. Runoff water is only stored for settling purposes and then may be discharged per an NPDES Permit.

PLANS

Attach any plans sketches or diagrams which will clarify the information given on this application. (See Attached Plate 5)

e undersigned acknowledge they have read the instructions includ-
with this application, and are aware no construction is to begin
til this application has been approved by the Utah State Engineer

4.27.88
Date

Signature of Applicant

Water Rights in Order By _____ Date _____
Area Engineer's Hazard Rating _____
Reviewed by Dam Safety By _____ Date _____
Comments _____

te of Approval _____

Robert L. Morgan, P.E.
State Engineer

FORM R-69
1/21/86

APPLICATION TO CONSTRUCT A DAM IMPOUNDING LESS THAN 20 ACRE-FEET

STATE OF UTAH

Application No. _____
Received _____
Entered _____

The following application is submitted, pursuant to Section 73-5-12 of the Utah Code Annotated 1953, to obtain the authority to build a dam which will create a reservoir impounding less than 20 acre-feet

1. APPLICANT INFORMATION

NAME Andalex Resources, Inc. -- Wildcat Loadout
ADDRESS P.O. Box 902
CITY Price COUNTY OF DAM Carbon
STATE Utah ZIP 84501

2. PURPOSE OF DAM

STOCK POND	____	REGULATING RES.	____	DIVERSION DAM	____
IRRIGATION	____	DEBRIS BASIN	____	FLOOD CONTROL	____
SEDIMENTATION	XXX	TAILINGS POND	____	RECREATION	____
OTHER (describe)	(Sediment Pond "D")				

3. LOCATION OF DAM

QUARTER/QUARTER (i.e. NESW) NWSE SECTION 33
TOWNSHIP 13 S. RANGE 9 E. BASE & MERIDIAN S.L.B.&M.

4. PROPOSED DAM

DAM HEIGHT (vertical distance) 9.0 FEET
CREST LENGTH (length of top of dam) 100 FEET
CREST WIDTH (width of top of dam) 15 FEET
UPSTREAM SLOPE 1 VERTICAL ON 3 HORIZONTAL
DOWNSTREAM SLOPE 1 VERTICAL ON 2 HORIZONTAL
WATER SURFACE AREA AT SPILLWAY CREST 0.29 ACRES
RESERVOIR CAPACITY AT SPILLWAY CREST 0.880 AC.FT.
TYPE OF DAM (i.e. earthfill, concrete, etc.,)
Earthfill (Pond Mostly Incised)

5. PROPOSED OUTLET

INSIDE DIAMETER 18 INCHES LENGTH 80 FEET
TYPE OF PIPE (i.e. concrete, steel, etc.,) Steel
TYPE OF GATE OR VALVE None (Inverted Inlet)
LOCATION OF GATE (upstream, downstream, center, etc.,) ____
None

(OVER)

PROPOSED SPILLWAY

CREST LENGTH (width of bottom of spillway) 18" Dia. FEET
DEPTH (from bottom of spillway to top of dam) 2.8 FEET
TYPE (i.e. earth channel, pipe, etc.,) Pipe

CONTROL (i.e. gates, flashboards, etc.,) None
(Emergency Spillway Only)

WATER RIGHTS

DESCRIBE (See Instructions) N/A

COMMENTS

This is a sediment control structure only. Runoff water is only stored for settling purposes and then may be discharged per an NPDES Permit.

PLANS

Attach any plans sketches or diagrams which will clarify the information given on this application. (See Attached Plate 4)

---

he undersigned acknowledge they have read the instructions includ- d with this application, and are aware no construction is to begin ntil this application has been approved by the Utah State Engineer

4-27-88
Date

Michael W Garner
Signature of Applicant

Water Rights in Order By _____ Date _____
Area Engineer's Hazard Rating _____
Reviewed by Dam Safety By _____ Date _____
Comments _____

---

ate of Approval _____

Robert L. Morgan, P.E.
State Engineer

FORM R-69
1/21/86

APPLICATION TO CONSTRUCT A DAM IMPOUNDING LESS THAN 20 ACRE-FEET

STATE OF UTAH

Application No. _____
Received _____
Entered _____

The following application is submitted, pursuant to Section 73-5-12 of the Utah Code Annotated 1953, to obtain the authority to build a dam which will create a reservoir impounding less than 20 acre-feet

1. APPLICANT INFORMATION

NAME Andalex Resources, Inc. - Wildcat Loadout
ADDRESS P.O. Box 902
CITY Price COUNTY OF DAM Carbon
STATE Utah ZIP 84501

2. PURPOSE OF DAM

STOCK POND	____	REGULATING RES.	____	DIVERSION DAM	____
IRRIGATION	____	DEBRIS BASIN	____	FLOOD CONTROL	____
SEDIMENTATION	XXX	TAILINGS POND	____	RECREATION	____
OTHER (describe)	(Sediment Pond "E")				

3. LOCATION OF DAM

QUARTER/QUARTER (i.e. NESW) NWSE SECTION 33
TOWNSHIP 13 S. RANGE 9 E. BASE & MERIDIAN S.L.B.&M.

4. PROPOSED DAM

DAM HEIGHT (vertical distance)	6		FEET
CREST LENGTH (length of top of dam)	150		FEET
CREST WIDTH (width of top of dam)	22		FEET
UPSTREAM SLOPE 1 VERTICAL ON	3		HORIZONTAL
DOWNSTREAM SLOPE 1 VERTICAL ON	2		HORIZONTAL
WATER SURFACE AREA AT SPILLWAY CREST	0.17		ACRES
RESERVOIR CAPACITY AT SPILLWAY CREST	0.849		AC.FT.

TYPE OF DAM (i.e. earthfill, concrete, etc.,) Earthfill (Pond Mostly Incised)

5. PROPOSED OUTLET

INSIDE DIAMETER 18 INCHES LENGTH 45 FEET
TYPE OF PIPE (i.e. concrete, steel, etc.,) Steel
TYPE OF GATE OR VALVE None (Inverted Inlet)
LOCATION OF GATE (upstream, downstream, center, etc.,) None

(OVER)

Baseline Description of

a

Native Sagebrush/Grass Reference Area

at

Wildcat Loadout
(PR 007/033)
NW 1/4 SE 1/4, T. 13 S., R. 9 E.
Carbon County, Utah

for

Andalex Resources, Inc.
P.O. Box 902
Price, Utah 84501

by

Nicholas S. Van Pelt*

August 16, 1988

---

*Currently temporary research assistant, Dept. of Range Science, Utah State University, Logan 84322-5230; (801) 750-2100, 750-2471. He holds a doctoral degree (1988) in range ecology from the same institution, and specializes in inventory and management problems of pinyon pine-juniper woodlands. His dissertation research was conducted at sites 4 miles west of the location reported herein, and at additional, long-term sites elsewhere in Carbon County.

All fieldwork and analysis was performed by the author. No work connected with this report was done on Utah State University time, nor with USU vehicles.

Introduction

This report is based on a one-day (August 15, 1988) visit to a reference area identified by Andalex and the Division of Oil, Gas, and Mining (hereinafter DOGM) on public (BLM) land 100 yards west of the southern coal stockpile. Work consisted of establishing a measured area perimeter marked at four corners, qualitatively describing the features of the site, obtaining voucher plant specimens, and estimating plant and surficial cover, shrub density, and mean shrub height. Since the area is for reference purposes, no productivity estimates were required from this initial description (DOGM, 1982). However, the recently-published soil survey for the area (Jensen and Borchert 1988) was consulted to learn the range of productivity to be expected for this SCS range site in a relatively dry year.

Location, Soils, and Range Site

The reference area occupies a parcel of typical native range unaffected by coal operations and other ground-disturbing activities. It lies just east of the north-south fence bounding the east side of the loadout area, but is currently unfenced. A low-standard dirt road passes just below (within 40 feet of) the area, affording easy access but not otherwise affecting it. The legal location is the NW 1/4 of the SE 1/4 of section 33, township 13 south, range 9 east, Salt Lake Base and Meridian (see Plate 1 of Mining and Reclamation Plan).

As currently marked, the reference area is rectangular, 300 by 160 feet, with the short sides perpendicular to the contour. The area's size is thus about 48,000 square feet, or 1.10 acre. All observations and sampling were confined to this tract, but the resultant estimates and descriptions apply (except for the drainageway to the north and the disturbed area to the west) to the land encircling this perimeter.

The terrain is convex, faces east-southeast, and has two small, non-incised gullies. The elevation is approximately 6170 feet, with only a 10 to 12-foot difference from the top to the bottom of the area. Slopes range from nearly level to about 8%.

The soil underlying the site belongs to the Hernandez family (Jensen and Borchert, 1988, page 294), and is a fine-loamy, mixed, mesic, Ustollic Calciorthid. The map unit, 52 (sheet 8 of the soil survey), is in the Semidesert Loam (Wyoming Big Sagebrush) range site. This unit extends well beyond the reference area, signifying that the area, while small, is not atypical of the surrounding soils. The Hernandez soil family and its capabilities are described in detail in the new survey (Jensen and Borchert, 1988), especially on page 45. The geology is alluvim mainly derived from sandstone and shale.

The natural vegetation that typifies the Hernandez soil corresponds very strongly to that currently occupying the reference area.

Land Use and Animal Influences

Although unaffected by coal operations, the reference area is grazed and browsed by cattle, sheep, and mule deer, with most use occuring in fall and winter. Cattle use, judged by manure, ground conditions, and plant composition, is probably very light or incidental, whereas signs of sheep and deer use are considerably more evident. Both sheep and deer pellets are abundant, and two Utah juniper just off the area were severely "high-lined" by wintering deer. However, there are no bed grounds or any other sign of unusual livestock or deer concentrations, such as severe browsing, patches of weed, or devegetated ground.

No vegetation or land treatments (spraying, disking, chaining) have been imposed on the area or its surroundings, nor have non-native forage plants been accidentally or deliberately established on the area.

The reference area serves as habitat for cottontail rabbits and prairie dogs. There was no evidence whatsoever of recent grasshopper depredations. Refer to page 195 of the soil survey for wildlife habitat evalutions of this soil family.

Vegetation and Surficial Conditions

The plant community is dominated by big sagebrush (Artemisia tridentata subspecies wyomingensis and tridentata) and Indian ricegrass (Oryzopsis hymenoides), both common, native species. Subordinate species include galleta (Hilaria jamesii), winterfat (Eurotia lanata), pricklypear (Opuntia sp.), low rabbitbrush (Chrysothamnus viscidiflorus), downy brome (Bromus tectorum), and needleandthread (Stipa comata). Other, much less abundant species and genera noted in the area were:

Trees and shrubs:

Juniperus osteosperma (Utah juniper) -- one sapling, 4.5' high
Pinus edulis (Two-needle pinyon) -- one seedling

Forbs:

Descurainia sp. (Tansymustard)
Plantago sp. (Wooly indianwheat)
Machaeranthera sp.
Oysterplant (Tragopogon sp.) -- two plants

Grasses:

Sitanion hystrix (bottlebrush squirreltail)
Crested wheatgrass (Agropyron cristatum) -- one plant

These minor species would not be encountered during normal sampling intensities, are of little importance in the plant community, and show no

signs of increasing. Furthermore, not all of them would necessarily be found on an equivalent-sized area of this rangeland type, whether natural or reclaimed. Both pinyon and juniper trees grow close to the reference area, but are not invading it.

Specimens of most species were collected, and some identifications were made with the assistance of the USU Extension Range Management Specialist. After a close search, no extraordinary plant taxa were observed within the area or around its perimeter, so a negative declaration regarding T & E species is warranted. The Gordon Creek/Wildcat Canyon area is not a known locality for endemic or unusual plants.

Much of the soil surface is bare, but there are no signs of accelerated erosion nor of deposition of soil fines from the adjacent coal area. Thin traces of coal dust have been deposited on the surface, but their occurrence is very slight. Moderate sheetwash is the only apparent influence on the surface; neither rilling, pronounced pedestaling of shrubs, nor incipient gullying are evident. At the same time, seasonal crusting of the soil may limit establishment of new plants, and there is no microphytic (mosses, algae, and lichens) soil crust whatsoever.

Vegetation Cover and Shrub Density

Fifteen (15) 40-foot (13 m) transects were established throughout the area to estimate cover by line interception (Canfield 1941). Random numbers (Steel and Torrie 1980) were used to determine x-y coordinates and transect orientation. Other work had shown that this sampling intensity (about 100 m of line per acre) would yield reasonably precise estimates of the major cover forms. The following results were obtained:

Form & Species	Percent Cover Mean	Std. Deviation	80% Confidence Interval
Ground Surface			
Bare ground	68.1	10.5	64.5 - 71.8
Litter	10.2	6.5	8.0 - 12.4
Shrubs			
Sagebrush	8.7	6.9	6.3 - 11.1
Winterfat	0.7	1.1	0.3 - 1.1
Rabbitbrush	0.5	0.9	0.2 - 0.8
Grasses			
Indian ricegrass	3.5	2.9	2.5 - 4.5
Galleta	6.2	11.0	2.4 - 10.1
Downy brome	0.5	1.8	-0.1 - 1.1
Needleandthread	0.6	0.9	0.3 - 0.9
Other			
Pricklypear	0.2	0.5	0.1 - 0.4

20.9

The two subspecies of sagebrush apparently present (Wyoming and basin) were not distinguished during sampling. The former seems to occupy slightly shallower soils on the interfluves, in a nearly monotypic stand, whereas the latter grows taller and in closer association with other species. However, there is little basis for demarcating two different shrub communities.

Shrub (woody plant) density was estimated with the point-centered quarter method (Cottam and Curtis, 1956; DOGM, 1982), using seventy (70) randomly placed points and measuring distance to plant stems to the nearest inch. The combined density of sagebrush (all sizes, both apparent species), winterfat, and rabbitbrush was estimated as 5,384 plants/acre (80% confidence interval of 4,094 to 7,862 plants/acre).

A supplemental (non-required) measurement taken to help describe the community and its "relative maturity" was a large sample of mature sagebrush heights:

Sample Size	Mean Height (")	St. Dev.	80% Confidence Interval
90	24.7	12.0	24.0" - 25.3"

Thus, the dominant sagebrush plants vary little in height. Very few displayed inflorescences, a possible consequence of browsing pressure. However, sagebrush seedlings are easily abundant enough to ensure perpetuation of the stand for the foreseeable future. Overall, the reference area supports a multi-sized, multi-aged sagebrush component. Although there are a few dozen dead sagebrush crowns, by no means is the stand declining or decadent. Combined cover of shrubs does not surpass 20%, but the area should be classed as "shrubland" (West 1983).

No productivity estimates were obtained, as they were not required and the cool-season grasses were well past maturity whereas the galleta had not headed out in response to summer rains. The SCS (Jensen and Borchert, 1988, page 166) states that 500 lb/acre of dry weight forage can be expected in an "unfavorable" year from this range site. At the time of sampling, certainly no more than this was available from all species, and production of palatable grasses on the area would not have exceeded 250 lb/acre. Depending on the class of livestock or big game using the area, its condition would be rated between "fair" and "good" -- certainly neither "poor" nor "excellent". The trend, as judged by the lack of tree invasion, grass reproduction, and the quantity and vigor of winterfat plants, is at least stable or slightly upward. Both sagebrush reproductive effort and winterfat numbers might increase after fencing.

In conclusion, the reference area appears to meet important criteria of representativeness, current range condition, typical levels of production, and lack of exogenous disturbances from the loadout operation or other cultural activities. There are no signs whatever of imminent or long-term change away from its current appearance and composition.

References and Background Literature

1. Canfield, R. H. 1941. Application of the line interception method in sampling range vegetation. Journal of Forestry, volume 39, pages 388-394.

2. Cottam, G., and J. T. Curtis. 1956. The use of distance measures in phytosociological sampling. Ecology, volume 37, pages 451-460.

3. Division of Oil, Gas, and Mining [DOGM]. 1982. Vegetation information guidelines for permanent program submissions for coal mines. State of Utah, Department of Natural Resources, Salt Lake City. Unpublished typescript, 16 pages.

4. Ferguson, R. B., and N. C. Frischknecht, 1985. Reclamation on Utah's Emery and Alton coal fields: techniques and plant materials. USDA Forest Service Research Paper INT-335, Intermountain Experiment Station, Ogden, Utah. 77 pages.

5. Jensen, E. H., and J. W. Borchert. 1988. Soil survey of Carbon Area, Utah. USDA Soil Conservation Service in cooperation with USDI Bureau of Land Management and Utah Agricultural Experiment Station. 294 pages + maps.

6. Jones, D. R. 1985. Gordon Creek Wildlife Management Area Habitat Management Plan. Utah Division of Wildlife Resources, Price, Utah. Unpublished typescript.

7. Ryan, T. A., B. L. Joiner, and B. F. Ryan. 1982. MINITAB Reference Manual. Department of Statistics, Pennsylvania State University, University Park, Pennsylvania.

8. Steel, R. G. D., and J. H. Torrie. 1980. Principles and procedures of statistics. McGraw-Hill Book Company, New York.

9. Stevens, R., and E. D. McArthur. 1974. A simple field technique for identification of some sagebrush taxa. Journal of Range Management, volume 27, pages 325-326.

10. Van Pelt, N. S. 1988. Dynamics and control of tree regrowth on previously cleared pinyon-juniper woodland sites in Utah. Ph.D. dissertation, Utah State University, Logan. 179 pages + appendices.

11. West, N. E. 1983. Great Basin-Colorado Plateau sagebrush semi-desert. Chapter 12 (pages 331-349) in N.E. West, editor Temperate Deserts and Semi-Deserts. Elsevier Publishing Company, Amsterdam.

10/14/88

Wednesday, October 12, 1988
Logan, Utah

Mr. Michael Glasson
Tower Division
Andalex Resources, Inc.
P. O. Box 902
Price, Utah 84501

Dear Mike:

As you requested earlier this morning, here are the field data sheets I retained from the August work at the Wildcat loadout reference area. The Division of Oil, Gas, and Mining guidelines do state that the consultant should be prepared to submit copies of the data sheets used in the field. I am happy to do so, and I apologize for not thinking of this earlier when I sent the report.

After your call, I took the time to write out and attach explanatory notes to the field forms, which are otherwise unedited and might be hard for a reader to understand. I have also tried to remedy any legibility problems possibly caused by my back problem on the day of the visit. I did not keep verbal field notes nor plant voucher specimens past the week in September when I said I was available for a followup visit; those were discarded in connection with a general cleanup of outdated files and specimens at the lab where I work.

You may wish to retain a photocopy of the sheets while sending the originals on to the state, with or without this letter. If I need to stop by Price in the near future, call me at 750-2471 and I'll get in touch with you about an early November date -- I'll be going through Price enroute to Moab, probably on the 7th.

Thank you.

Sincerely yours,

Nick Van Pelt

Nicholas Van Pelt

Attachments

October 12, 1988

Explanatory notes to accompany field data sheets and computer printouts --- in connection with Nicholas Van Pelt's report to Andalex Resources concerning the small Wildcat loadout reference area, mid-August, 1988.

Overall:

1. The two required estimates were for ground-surface and plant species cover, and for density of the major shrubs. The respective techniques used were line-intercept ("LI") and point-centered-quarter method ("PCQM").

2. For sample locations, I used coordinates generated from a random-numbers table in a standard statistics book (see photocopy). This is standard procedure, in preference to spacing line ends or plot centers systematically (for example, every 5 meters or 3 yards) or subjectively (choosing the placements to be "representative" or "typical").

3. Printouts are from MINITAB statistical package runs.

Refer to explanations attached to the sheets for the particular analysis.

(Example)

TABLE A–15 Table of random digits

Line	*(1)–(5)*	*(6)–(10)*	*(11)–(15)*	*(16)–(20)*	*(21)–(25)*	*(26)–(30)*	*(31)–(35)*
101	13284	16834	74151	92027	24670	36665	00770
102	21224	00370	30420	03883	94648	89428	41583
103	99052	47887	81085	64933	66279	80432	65793
104	00199	50993	98603	38452	87890	94624	69721
105	60578	06483	28733	37867	07936	98710	98539
106	91240	18312	17441	01929	18163	69201	31211
107	97458	14229	12063	59611	32249	90466	33216
108	35249	38646	34475	72417	60514	69257	12489
109	38980	46600	11759	11900	46743	27860	77940
110	10750	52745	38749	87365	58959	53731	89295
111	36247	27850	73958	20673	37800	63835	71051
112	70994	66986	99744	72438	01174	42159	11392
113	99638	94702	11463	18148	81386	80431	90628
114	72055	15774	43857	99805	10419	76939	25993
115	24038	65541	85788	55835	38835	59399	13790
116	74976	14631	35908	28221	39470	91548	12854
117	35553	71628	70189	26436	63407	91178	90348
118	35676	12797	51434	82976	42010	26344	92920
119	74815	67523	72985	23183	02446	63594	98924
120	45246	88048	65173	50989	91060	89894	36036
121	76509	47069	86378	41797	11910	49672	88575
122	19689	90332	04315	21358	97248	11188	39062
123	42751	35318	97513	61537	54955	08159	00337
124	11946	22681	45045	13964	57517	59419	58045
125	96518	48688	20996	11090	48396	57177	83867
126	35726	58643	76869	84622	39098	36083	72505
127	39737	42750	48968	70536	84864	64952	38404
128	97025	66492	56177	04049	80312	48028	26408
129	62814	08075	09788	56350	76787	51591	54509
130	25578	22950	15227	83291	41737	59599	96191
131	68763	69576	88991	49662	46704	63362	56625
132	17900	00813	64361	60725	88974	61005	99709
133	71944	60227	63551	71109	05624	43836	58254
134	54684	93691	85132	64399	29182	44324	14491
135	25946	27623	11258	65204	52832	50880	22273
136	01353	39318	44961	44972	91766	90262	56073
137	99083	88191	27662	99113	57174	35571	99884
138	52021	45406	37945	75234	24327	86978	22644
139	78755	47744	43776	83098	03225	14281	83637
140	25282	69106	59180	16257	22810	43609	12224
141	11959	94202	02743	86847	79725	51811	12998
142	11644	13792	98190	01424	30078	28197	55583
143	06307	97912	68110	59812	95448	43244	31262
144	76285	75714	89585	99296	52640	46518	55486
145	55322	07598	39600	60866	63007	20007	66819
146	78017	90928	90220	92503	83375	26986	74399
147	44768	43342	20696	26331	43140	69744	82928
148	25100	19336	14605	86603	51680	97678	24261
149	83612	46623	62876	85197	07824	91392	58317
150	41347	81666	82961	60413	71020	83658	02415

Source: *Table of 105,000 Random Decimal Digits*, Interstate Commerce Commission, Bureau of Transport Economics and Statistics, 1949.

Line-intercept field sheets and computer printout (first stapled set).

There is no standard field sheet that I know of for recording line-intercept data. The sheets used here show a species or ground-cover category (see explanation of abbreviations, below) on the left and right sides, with new categories added as encountered. Each division, of the 80 total, represents one-half meter. The cover estimated along the tape for each species or other form of cover is represented by the penciled line segments. The total length of the segments for each cover category was added up, and then converted to percentages of the total line length (40 meters) for that transect. The percentages for each cover category for all transects were next entered into a computer data file, and the statistics shown were readily generated. All the means should add up to virtually 100.00 percent; in this instance, the total (C1 through C10) was 99.39%.

Abbreviations	Species or Other Category	Printout Code
"bg"	bare ground	C1
"ltr"	plant litter	C2
"At"	Artemisia tridentata	C3
"ukg"	Unknown grass, later identified as galleta	C4
"Orhy"	Oryzopsis hymenoides	C5
"Cela"	Ceratoides lanata	C6
"Chry"	Chrysothamnus spp.	C7
"Cact"	Cactus, later identified as Opuntia sp.	C8
"Brte"	Bromus tectorum	C9
"Stco"	Stipa comata	C10

```
PP           JJ                   SS       YY       NN       NN
PP              JJJJ      SSSSSSSS         YY       NN       NN
PP              JJJJJJ    SSSSSSSS         YY       NN       NN

L        III    SSSS   TTTTT   AAA   TTTTT   SSSS
L         I    S         T    A   A    T    S
L         I    S         T    A   A    T    S
L         I     SSS      T    A   A    T     SSS
L         I         S    T    AAAAA    T         S
L         I         S    T    A   A    T         S
LLLLL    III   SSSS      T    A   A    T    SSSS

    J   OOO   BBBB          1   7777   999   7777
    J  O   O  B   B        11      7  9   9     7
    J  O   O  B   B         1      7  9   9     7
    J  O   O  BBBB          1     7    9999    7
J   J  O   O  B   B         1    7        9   7
J   J  O   O  B   B         1   7        9   7
 JJJ    OOO   BBBB        111  7      999   7
```

Job LISTATS (1797) queued to PRX_NR213 on 16-AUG-1988 22:22 by user PJSYN, UIC [PJSYN], under account 540002 at priority 100, started on printer _USU$TXJ6: on 16-AUG-1988 22:22 from queue PRX_NR213.

5555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555
5555555555555555555555555555555555555 Digital Equipment Corporation - VAX/VMS Version V4.5 5555555555555555555555555555555555555
5555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555555

line intercepts

MTB > TINTERVAL WITH 80 PERCENT CONFIDENCE FOR DATA IN C1-C10

	N	MEAN	STDEV	SE MEAN	80.0 PERCENT C.I.
C1	15	68.13	10.53	2.72	(64.47, 71.79)
C2	15	10.20	6.46	1.67	(7.96, 12.44)
C3	15	8.73	6.86	1.77	(6.35, 11.12)
C4	15	6.27	11.06	2.86	(2.42, 10.11)
C5	15	3.533	2.900	0.749	(2.526, 4.541)
C6	15	0.733	1.163	0.300	(0.329, 1.137)
C7	15	0.467	0.915	0.236	(0.149, 0.785)
C8	15	0.200	0.561	0.145	(0.005, 0.395)
C9	15	0.533	1.807	0.467	(-0.094, 1.161)
C10	15	0.600	0.910	0.235	(0.284, 0.916)

MTB > READ 'WILDCAT.HTS' C1

```
PP          JJ      J          SS      YY      NN      NN
PP            JJJJJJ    SSSSSSSS      YY      NN      NN
PP            JJJJJJ    SSSSSSSS      YY      NN      NN


H    H  EEEEE   III    GGGG  H    H  TTTTT   SSSS
H    H  E         I   G      H    H    T    S
H    H  E         I   G      H    H    T    S
HHHHH   EEEE      I   G      HHHHH     T     SSS
H    H  E         I   G GGG  H    H    T        S
H    H  E         I   G   G  H    H    T        S
H    H  EEEEE   III    GGG   H    H    T    SSSS


  J    000   BBBB          1    7777    999    888
  J   0   0  B   B        11       7   9   9  8   8
  J   0   0  B   B         1       7   9   9  8   8
  J   0   0  BBBB          1      7    9999   888
J J   0   0  B   B         1     7         9  8   8
J J   0   0  B   B         1    7          9  8   8
 JJJ    000   BBBB        111   7        999   888
```

Job HEIGHTS (1798) queued to PRX_NR213 on 16-AUG-1988 22:23 by user PJSYN, UIC [PJSYN], under account 540002 at priority 100, started on printer _USU$TXJ6: on 16-AUG-1988 22:23 from queue PRX_NR213.

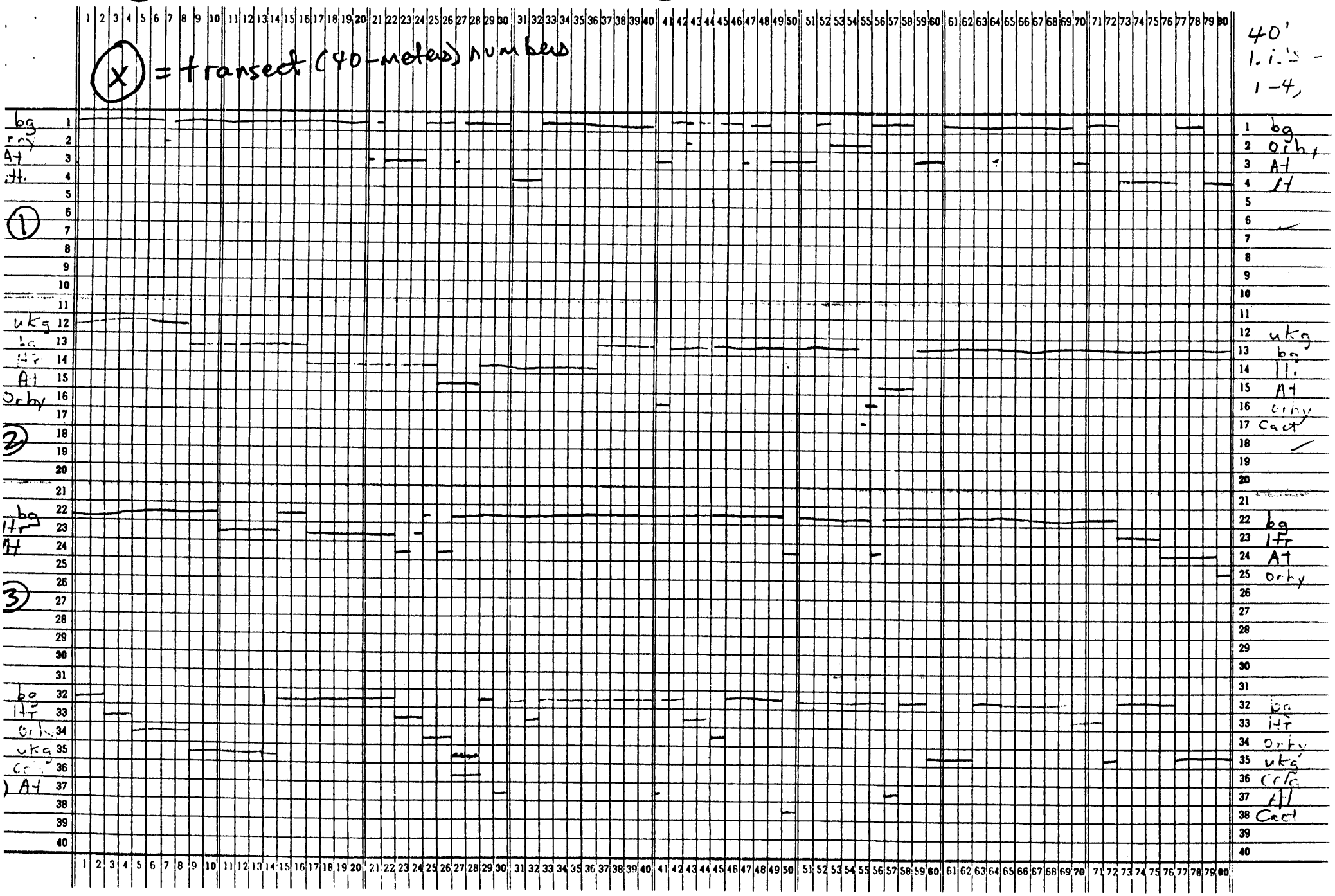
666ooooooooooooooooooooooooooooooooooDigital Equ666ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
ooooooooooooooooooooooooooooooooooo
```

Art heights

```
MTB > TINTERVAL WITH 80 PERCENT CONFIDENCE FOR HTS IN C1

             N      MEAN     STDEV  SE MEAN   80.0 PERCENT C.I.
C1          90     62.74     12.00     1.27  (   61.11,   64.38)

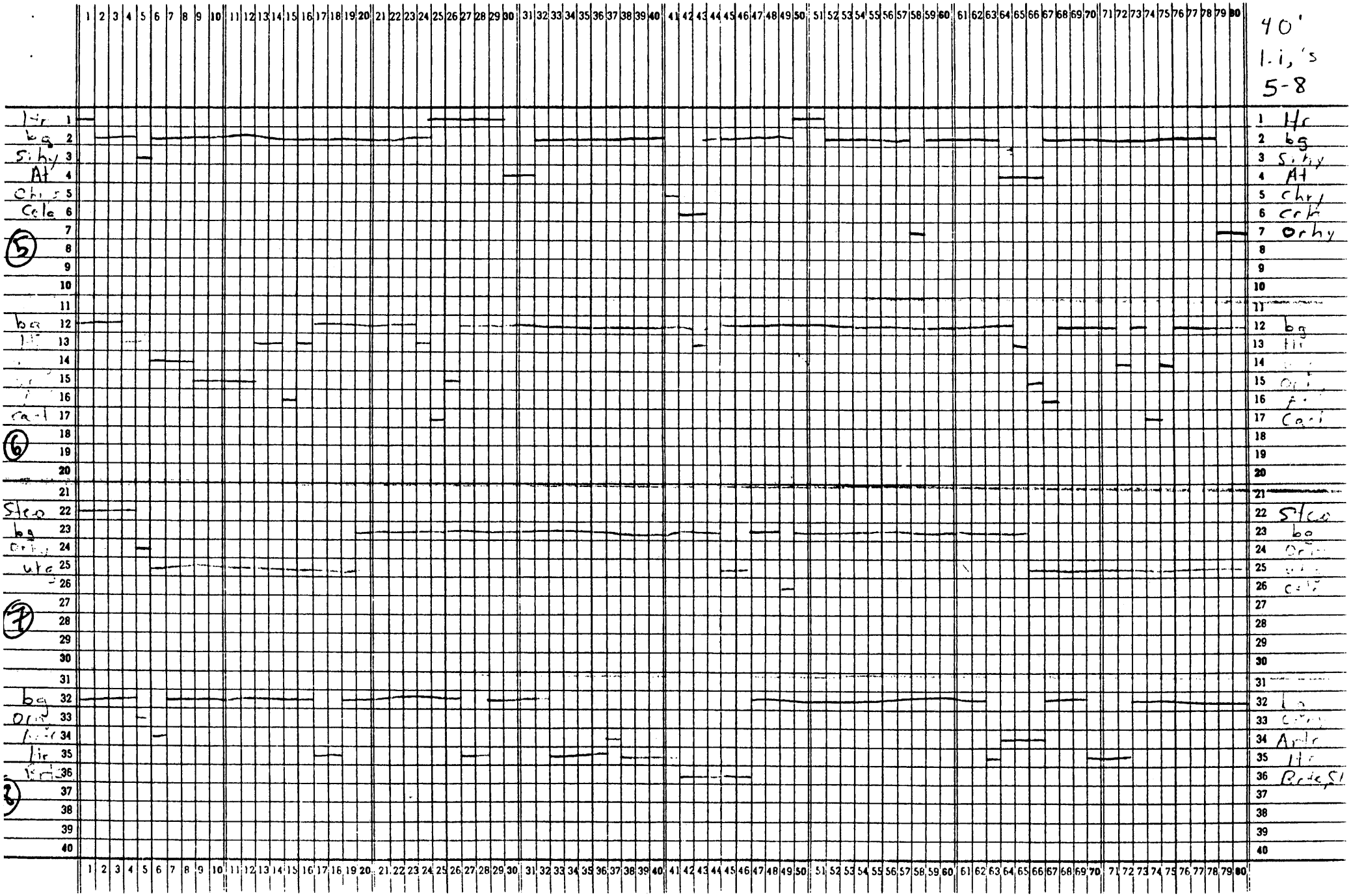
MTB > READ 'MAP.ART' C1
     70 ROWS READ

C1
    3.2       2.2       1.2       1.5     .   .   .

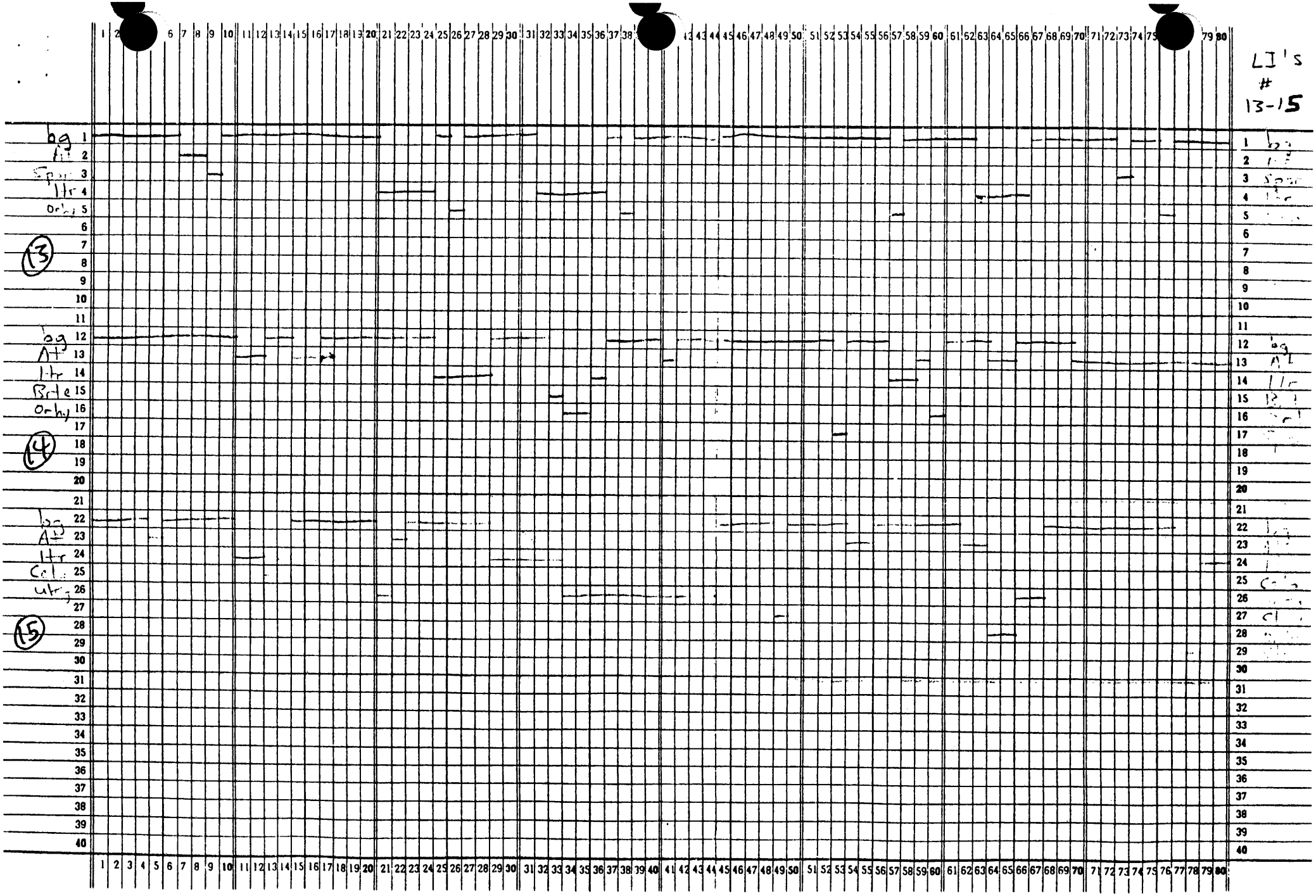
MTB > OUTFILE 'ART.CVR'
```

24.7" average; (24.0" – 25.3")
```



(x) = transect (40-meters) numbers
40'
1.i.'s -
1-4,
bg
Orhy
At
Ht
ukg
bg
Ht
At
Orhy
Cact
bg
Ht
At
Orhy
bg
Ht
Orhy
ukg
Cela
At
Cact
1
2
3


40'
1.i,'s
5-8
Hr
bg
Sihy
At
Chry
Cola
Orhy
Steo
Artr
Brte,Sl
5
6
7
8

LI's
#
13-15



Density of the most prominent shrub species (second stapled set).

Once a random point had been located via coordinates, four 90-degree quadrants were established with a round sampling ring having four spokes, again with the divisions among them determined randomly (for example, compass bearing of 136 degrees as determining the dividing line between the upper left and upper right quadrants). On the data sheets, the quadrants were coded as follows:

"UL" means upper left

"UR" means upper right

"LR" means lower left

"LL" means lower left

Distances to the nearest plant of the species in that quadrant were recorded in the appropriate column. "At" means Artemisia (sagebrush species), "Cela" means Ceratoides lanata (winterfat) above the column for averages. For each point, "MAP" means mean area per plant, subsequently used (per the grand mean; see printouts) in the formula supplied in the DOGM guidelines. Note that winterfat were so sparse that they only occurred within a reasonable distance of the point in 10 of the samples, whereas sagebrush were within about 116" (about 10 feet) in all samples.

nearly

Estimation of mean heights of mature sagebrush -- optional measure (final sheet, not stapled).

Computer printout; I do not have the field sheet.

```
PP          JJ                   SS       YY       NN       NN
PP            JJJJJJ   SSSSSSSS           YY       NN       NN
PP            JJJJJJ   SSSSSSSS           YY       NN       NN

                  AAA    RRRR    TTTTT
                 A   A   R   R     T
                 A   A   R   R     T
                 A   A   RRRR      T
                 AAAAA   R R       T
                 A   A   R  R      T
                 A   A   R   R     T

       J   000    BBBB          1    7777    999   55555
       J  O   O   B   B        11       7   9   9  5
       J  O   O   B   B         1       7   9   9  555
       J  O   O   BBBB          1      7    9999      5
   J   J  O   O   B   B         1     7        9      5
   J   J  O   O   B   B         1    7         9  5   5
    JJJ    000    BBBB         111   7       999   555
```

Job ART (1795) queued to PRX_NR213 on 16-AUG-1988 22:21 by user PJSYN, UIC [PJSYN], under account 540002 at priority 100, started on printer _USU$TXJ6: on 16-AUG-1988 22:21 from queue PRX_NR213.

```
333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333
3333333333333333333333333333333333333  Digital Equipment Corporation - VAX/VMS Version V4.5  3333333333333333333333333333333333333
333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333
```

density

5,384.4 plants/ac - combined

(4099.0 - 7862.8)

```
MTB > TINTERVAL WITH 80 PERCENT CONFIDENCE FOR MAP IN C1

               N      MEAN    STDEV   SE MEAN    80.0 PERCENT C.I.
C1            70      8.09    16.49      1.97   (     5.54,    10.64)

MTB > TINTERVAL WITH 95 PERCENT CONFIDENCE FOR MAP IN C1

               N      MEAN    STDEV   SE MEAN    95.0 PERCENT C.I.
C1            70      8.09    16.49      1.97   (     4.15,    12.02)

MTB >
MTB > READ 'MAP.ELA' C1
     10 ROWS READ

C1
```

PC Q:

	UL	UR	LR	LL	Adj $\bar{X}$	Cela Adj	Adj MAP	Cela MAP
1	3	4	16	9	7		.5	
2	6	2	13	10	.6		.4	
3	12	24	27	30	1.2		3.6	
4	21	41	39	79	.7		13.7	
5	15	77	71	79	.5		25.0	
6	11	65	17	17	.3		5.3	
7	5	7	10	12	.7		.5	
8	10	27	8	35	1.1		2.9	
9	17	20	12	22	.8		2.3	
10	12	11	12	12	1.6		1.0	
11	16	4	17	9	1.6		1.0	
12	13	46	49	7	.4		5.8	
13	60	16	58	43	.7		13.7	
14	22	20	39	13	.6		4.0	
15	4	6	6	5	.4		.2	
16	14	9	27	11	1.4		2.0	
17	29	40	63	32	.7		11.5	
18	116	59	72	25	.6		31.3	
19	33	26	52	30	.3		10.9	
20	19	46	112	14 5	.7	3.7	24.0	13.
21	25	74	37	55	2.0	3.8	54.0	14.
22	60	76	13	20	2.3		5.3	
23	5	8	6	15	.7		.5	
24	19	16	12	23	1.4		2.0	
25	21	30	37	27	2.4		5.8	
26	10	29	20	50	2.3		5.3	
27	119	15	13	6	.9	1.6	.8	2.
28	4	1	6	18	.6		.4	
29	32	16	14	18	1.7		3.9	
30	2	5	16	5	.6		.4	
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

PCQM

p 1 - ▭ = Cela

	UL	UR	LR	LL	At" Aj	Aj Cela	At MAP		
1	19	7	19	42	1.8		3.2	1	(randomly
2	18	12	36	6	1.[illegible]		2.2	2	located
3	13	2	20	17	1.1		1.2	3	within
4	13	22	13	11	1.2		1.5	4	the stand
5	25	21	10	10	1.1	2.1	1.2	5	4.4
6	21	16	17	33	1.8		3.2	6	
7	23	6	4	26	1.2		1.4	7	
8	17	8	6	9	.8		.6	8	
9	25	56	13	16	[illegible]		5.3	9	
10	12	12	19	5	1.0		1.0	10	
11	48	33	45	31	5.3		10.9	11	
12	33	12	24	39	[illegible]		4.8	12	
13	180	52	39	38	6.4		41.0	13	
14	30	15	10	37	1.4	1.[illegible]	3.6	14	3.6
15	26	31	57	28	[illegible]	[illegible]	10.2	15	5.3
16	19	38	14	27	2.[illegible]		4.0	16	
17	[illegible]	12	57	33	[illegible]		6.2	17	
18	53	45	55	10	[illegible].4		5.5	18	
19	58	21	26	14	2.7	1.[illegible]	7.3	19	2.9
20	103	32	35	105	[illegible]	2.1	75.7	20	7.3
21	30	47	51	35	3.4		11.6	21	
22	24	57	25	64	10.4	[illegible]	108.2	22	4.0
23	44	39	47	17	3.1		9.6	23	
24	52	27	24	21	[illegible]	1.[illegible]	8.4	24	2.9
25	9	16	25	34	1.1		2.9	25	
26	10	27	10	8	1.1		1.2	26	
27	26	10	11	5	1.[illegible]		1.2	27	
28	25	33	35	28	[illegible]		6.3	28	
29	23	73	68	40	4.[illegible]		17.6	29	
30	24	7	38	25	[illegible]		3.6	30	
31	12	28	33	32	[illegible]		4.8	31	
32	3	25	21	20	1.4		1.9	32	
33	4	5	4	3	.[illegible]		.09	33	
34	5	11	5	12	.[illegible]		.5	34	
35	15	4	10	15	[illegible]		.8	35	
36	4	4	6	8	.4		.2	36	
37	11	9	4	18	[illegible]		.6	37	
38	4	29	15	13	1.[illegible]		1.6	38	
39	33	29	4	34	[illegible].1		4.4	39	
40	20	31	20	27	1.6	1.7	2.6	40	2.9

APPENDIX I
(SUPPLEMENT)

VEGETATION REFERENCE REPORT
MT. NEBO SCIENTIFIC

VEGETATION SAMPLING RESULTS: SAGEBRUSH/GRASS REFERENCE AREA AT THE WILDCAT LOADOUT 2007

Prepared by

MT. NEBO SCIENTIFIC, INC.
330 East 400 South, Suite 6
Springville, Utah 84663
(801) 489-6937

Patrick D. Collins, Ph.D.

for

ANDALEX RESOURCES
Post Office Box 902
Price, Utah 84501

January 2008

TABLE OF CONTENTS

INTRODUCTION 1

METHODS 3

- Vegetation Map 3
- Sampling Design and Transect/Quadrat Placement 3
- Cover and Composition 4
- Density 4
- Sample Size & Adequacy 4
- Productivity 5
- Raw Data 5
- Photographs 5
- Threatened & Endangered Plant Species 6

RESULTS 5

DISCUSSION 7

RAW DATA ..... Appendix

INTRODUCTION

The Wildcat Loadout is a site that is used to load coal from local mines to a rail system for delivery to the mines' customers. The coal is first brought in by trucks and stockpiled at the loadout site. Andalex Resources has proposed an expansion to the existing coal stockpiles at the loadout site. This expansion would impact an existing vegetation reference area, or an area that had been previously set aside to be used to represent future standards for revegetation success at the time of final reclamation for the entire loadout site.

Appendix I of the Mining & Reclamation Plan (MRP) provides information on the existing sagebrush/grass reference area at the Wildcat Loadout. Because this reference area would be impacted by construction of the proposed loadout expansion plan, a new **sagebrush/grass reference area** has been selected to replace it. The proposed new reference area is located in a plant community that, with all probability, was very similar to the community that was disturbed when construction first occurred at the present loadout facility. Table 1 below provides GPS coordinates for the location of the new reference area.

Table 1: Coordinates for the proposed new Sagebrush/Grass Reference Area at the Wildcat Loadout.

Waypoint Name	Zone	Easting (m)	Northing (m)	Name
AWCSRF	12S	0506974	4388164	Sagebrush/Grass Reference Area

Typically, the data of reference areas are compared statistically with those areas proposed for disturbance *prior to* construction of the site to assess their appropriateness as future revegetation success standards. In the case of the Wildcat Loadout, the site was constructed before the regulations required coal loadouts to fall under the authority mandated by the Surface Mining Control and Reclamation Act of 1977 (SMCRA). Consequently, no previous quantitative data for the site is available in affected areas prior to disturbance caused by construction of the loadout facilities and coal storage piles. However, by visiting the site and reviewing aerial photographs of the area, it is relatively easy to predict what plant communities existed before the Wildcat Loadout was there. A recent aerial photograph of the site that delineates the existing plant communities of the loadout and adjacent areas has been prepared and provided *separately* for incorporation into the Mining and Reclamation Plan (MRP) at the State of Utah, Division of Oil, Gas & Mining (DOGM). The map also shows the location of the new reference area, loadout facilities, current extent of the coal storage piles, existing permit boundary and the proposed new boundary line associated with expansion of the current coal piles (see *Vegetation Map of the Wildcat Loadout* in the MRP).

The purpose of this report is to describe and provide data from quantitatively sampling the new sagebrush/grass reference area at the Wildcat Loadout site.

METHODS

Methodologies used for this study were performed in accordance with the guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOGM). Qualitative data for this report and a preliminary report called "*Proposed New Sagebrush/Grass Reference Area for the Wildcat Loadout*" (April 9, 2007) were taken on March 15, 2007. Follow-up quantitative data were recorded within the plant community of the new sagebrush/grass reference area on July 19, 2007.

Vegetation Map

As mentioned above, a vegetation map has been prepared for the Wildcat Loadout and adjacent areas. This map was prepared using recent aerial photography as well as information gathered onsite during the field visits of the study. The final map has been submitted separate from this report (see *Vegetation Map of the Wildcat Loadout* in the MRP).

Sampling Design and Transect/Quadrat Placement

Transect lines for vegetation sampling were placed randomly within the boundaries of the new reference area. The transect placement technique was employed with the goal to adequately sample a representative subset of the entire site. Once the transects were randomly established, quadrat locations for sampling were chosen using random numbers from the transect lines with the objective to record data without preconceived bias.

Cover and Composition

Cover estimates were made using ocular methods with meter square quadrats. Species composition, cover by species, and relative frequencies were also assessed from the quadrats. Additional information recorded on the raw data sheets were: estimated precipitation, slope, exposure, grazing use, animal disturbance and/or other appropriate notes. Plant nomenclature follows "*A Utah Flora*" (Welsh et al., 2003).

Density

Density of woody plant species for the new reference area was estimated using the point-quarter method. In this method, random points were placed on the sample sites and measured into four quarters. The distances to the nearest woody plant species were then recorded in each quarter. The average point-to-individual distance was equal to the square root of the mean area per individual. The number of individuals per acre was the end results of the calculations.

Sample Size & Adequacy

Sampling adequacy for cover and density was attempted by using the formula given below.

$$nMIN = \frac{t^2 s^2}{(dx)^2}$$

where,

nMIN	= minimum adequate sample
t	= appropriate confidence t-value
s	= standard deviation
x	= sample mean
d	= desired change from mean

Productivity

Current annual biomass productivity measurements were estimated by the USDA Natural Resources Conservation Service (NRCS) in their soil survey of the area. This information was accessed on their Web Soil Survey (WSS) database on January 31, 2008.

Raw Data

Summarized raw data sheets for cover, composition and frequency have been included in the APPENDIX of this report.

Photographs

A color photograph of the sample area was taken during the sampling periods and one photograph has been submitted with this report (Figure 1).

Threatened & Endangered Plant Species

Prior to recording quantitative data on the plant communities, a sensitive plant species survey was conducted. To initiate the study, appropriate agencies were consulted and other sources were reviewed (sensitive species files at *Mt. Nebo Scientific, Inc.*) for potential plant species that are known to be rare, endemic, threatened, endangered or otherwise sensitive in the project area. A list of these has been prepared and will be provided for the MRP *separate* to this report.

RESULTS

Figure 1 is a color **photograph** of the sample area for the new sagebrush/grass reference area. The reference area was dominated by Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*), followed by blue grama (*Bouteloua gracilis*), broom snakeweed *(Gutierrezia sarothrae*), foxtail barley (*Hordeum jubatum*) and Indian ricegrass (*Stipa hymenoides*). For a complete list of species present in the sample quadrats, along with their **cover** and **frequency** values, refer to Table 2.

The **total living cover** of the reference area was estimated at 45.17% (Table 3-A). The living cover composition by lifeform was represented by 56.39% woody species, 43.13% grasses and only 0.47% forb species (Table 3-B).

For **woody species density**, the total number of individuals per acre was estimated at 8,042

individuals per acre (Table 4) and was dominated by Wyoming big sagebrush, broom snakeweed, winterfat (*Ceratoides lanata*) and central pricklypear cactus (*Opuntia polyacantha*).

Total **annual range production** for a "normal" year was estimated at 700 pounds per acre and 900 pounds per acre for a "favorable" year by the NRCS.

No threatened, endangered, rare, endemic or **sensitive plant species** were found within the new reference area or areas adjacent to it.

DISCUSSION

As mentioned above, there is no quantitative data available of the plant communities prior to disturbance of them by construction of the Wildcat Loadout site. However, with a site visit and review of aerial photographs, it is relatively easy to imagine what these communities were beforehand. The color photograph provided along with the quantitative data from sampling the sagebrush/grass community and a site visit by a biologist from DOGM should provide adequate information and justification for approval of this new sagebrush/grass reference area for future revegetation success standards.

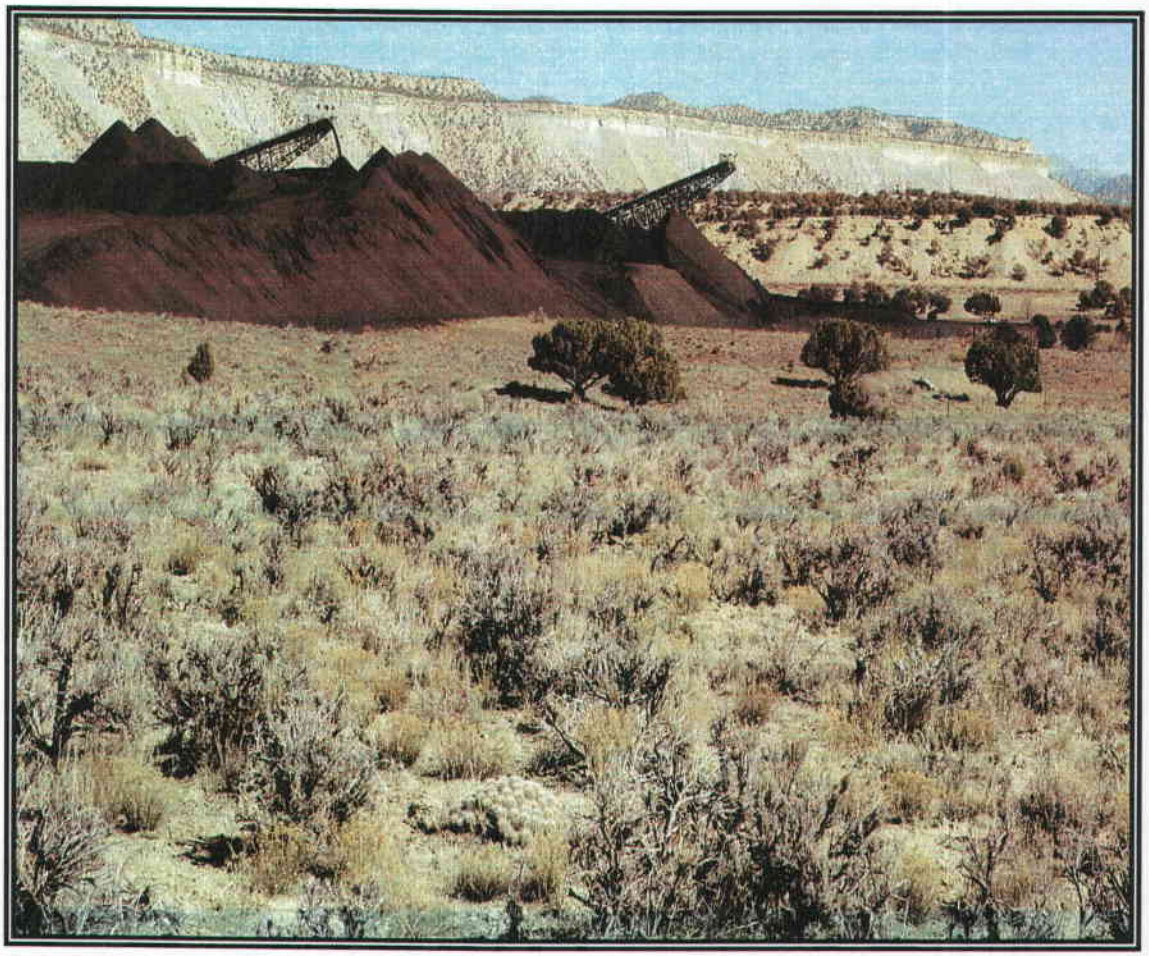


Figure 1: New Sagebrush/Grass Reference Area for the Wildcat Loadout

Table 2: Wildcat Loadout. Living Cover and Frequency by Plant Species.

Sagebrush/Grass Reference Area (2007)	Mean Percent	Standard Deviation	Percent Frequency
TREES & SHRUBS			
Artemisia nova	0.50	1.98	6.67
Artemisia tridentata	14.27	11.44	76.67
Ceratoides lanata	2.33	4.22	30.00
Chrysothamnus nauseosus	0.33	1.80	3.33
Gutierrezia sarothrae	6.07	5.38	73.33
Opuntia polyacantha	1.57	3.54	16.67
Pinus edulis	0.17	0.90	3.33
FORBS			
Sphaeralcea grossulariifolia	0.17	0.90	3.33
Stanleya pinnata	0.07	0.36	3.33
GRASSES			
Bouteloua gracilis	7.33	11.16	40.00
Hilaria jamesii	2.33	5.12	26.67
Hordeum jubatum	5.27	4.21	70.00
Poa secunda	0.50	1.98	6.67
Stipa hymenoides	4.27	9.78	20.00

Table 3: Wildcat Loadout Total Cover and Composition (2007).

Sagebrush/Grass Reference Area (2007)		
A. TOTAL COVER	Mean Percent	Standard Deviation
Total Living Cover	45.17	12.68
Litter	14.63	9.99
Bareground	37.60	14.27
Rock	1.30	0.78
Cryptogamic soil	1.30	3.51
B. % COMPOSITION		
Trees & Shrubs	56.39	19.48
Forbs	0.47	2.51
Grasses	43.14	19.87

Table 4: Wildcat Loadout. Woody Species Density (2007).

Sagebrush/Grass Reference Area (2007)	
SPECIES	**Individuals Per Acre**
Artemisia nova	536.10
Artemisia tridentata	3015.59
Ceratoides lanata	1005.20
Chrysothamnus nauseosus	201.04
Gutierrezia sarothrae	2278.44
Opuntia polyacantha	871.17
Pinus edulis	67.01
Tetradymia spinosa	64.01
TOTAL	**8041.57**

APPENDIX

(Raw Data)

ANDALEX
Wildcat Loadout
Sagebrush/Grass Reference Area
Exposure: NE
Slope: 3 deg

Sample Date: 19 July 2007	1.00	2.00	3.00	4.00	5.00	6.00	7.00
TREES & SHRUBS							
Artemisia nova	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia tridentata	15.00	15.00	0.00	3.00	15.00	20.00	25.00
Ceratoides lanata	0.00	0.00	0.00	2.00	13.00	0.00	5.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gutierrezia sarothrae	5.00	0.00	10.00	5.00	5.00	0.00	7.00
Opuntia polyacantha	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pinus edulis	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FORBS							
Sphaeralcea grossulariifolia	0.00	0.00	0.00	0.00	5.00	0.00	0.00
Stanleya pinnata	0.00	0.00	0.00	0.00	2.00	0.00	0.00
GRASSES							
Bouteloua gracilis	5.00	5.00	20.00	35.00	0.00	35.00	0.00
Hilaria jamesii	0.00	0.00	5.00	0.00	5.00	0.00	5.00
Hordeum jubatum	5.00	10.00	0.00	0.00	5.00	5.00	8.00
Poa secunda	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COVER							
Crypto	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Living Cover	35.00	30.00	35.00	45.00	50.00	60.00	50.00
Litter	10.00	19.00	9.00	13.00	18.00	8.00	8.00
Bareground	50.00	50.00	55.00	40.00	30.00	30.00	40.00
Rock	5.00	1.00	1.00	2.00	2.00	2.00	2.00
% COMPOSITION							
Shrubs	57.14	50.00	28.57	22.22	66.00	33.33	74.00
Forbs	0.00	0.00	0.00	0.00	14.00	0.00	0.00
Grasses	42.86	50.00	71.43	77.78	20.00	66.67	26.00

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00
0.00	0.00	0.00	10.00	0.00	0.00	5.00	0.00	0.00
20.00	0.00	30.00	5.00	20.00	20.00	30.00	5.00	0.00
0.00	0.00	0.00	5.00	0.00	0.00	10.00	0.00	15.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	25.00	10.00	5.00	5.00	10.00	5.00	5.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	10.00	20.00	0.00	0.00	0.00	25.00	0.00
10.00	5.00	0.00	0.00	10.00	5.00	0.00	0.00	0.00
0.00	5.00	10.00	5.00	10.00	10.00	15.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35.00	35.00	60.00	50.00	45.00	45.00	65.00	35.00	40.00
14.00	19.00	19.00	19.00	9.00	9.00	9.00	14.00	9.00
50.00	45.00	20.00	30.00	45.00	45.00	25.00	50.00	50.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
71.43	71.43	66.67	50.00	55.56	66.67	76.92	28.57	50.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28.57	28.57	33.33	50.00	44.44	33.33	23.08	71.43	50.00

17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	25.00	35.00	10.00	35.00	25.00	25.00	10.00	10.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	0.00	10.00	15.00	5.00	5.00	0.00	10.00	0.00
0.00	7.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	10.00	0.00	15.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	10.00	0.00	5.00	5.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	8.00	0.00	10.00	0.00	0.00	0.00	25.00	40.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35.00	40.00	65.00	60.00	60.00	35.00	30.00	65.00	60.00
9.00	9.00	19.00	9.00	18.00	45.00	50.00	9.00	24.00
50.00	50.00	15.00	30.00	20.00	19.00	19.00	25.00	15.00
1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
28.57	80.00	69.23	41.67	66.67	85.71	83.33	61.54	33.33
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71.43	20.00	30.77	58.33	33.33	14.29	16.67	38.46	66.67

26.00	27.00	28.00	29.00	30.00	Mean	SDev	Freq
0.00	0.00	0.00	0.00	0.00	0.50	1.98	6.67
0.00	0.00	0.00	25.00	5.00	14.27	11.44	76.67
0.00	5.00	0.00	0.00	0.00	2.33	4.22	30.00
0.00	0.00	0.00	0.00	0.00	0.33	1.80	3.33
10.00	10.00	10.00	0.00	0.00	6.07	5.38	73.33
0.00	10.00	10.00	0.00	10.00	1.57	3.54	16.67
0.00	0.00	0.00	0.00	0.00	0.17	0.90	3.33
0.00	0.00	0.00	0.00	0.00	0.17	0.90	3.33
0.00	0.00	0.00	0.00	0.00	0.07	0.36	3.33
0.00	30.00	0.00	0.00	10.00	7.33	11.16	40.00
0.00	0.00	0.00	0.00	0.00	2.33	5.12	26.67
0.00	10.00	5.00	5.00	10.00	5.27	4.21	70.00
0.00	0.00	0.00	0.00	0.00	0.50	1.98	6.67
25.00	0.00	0.00	0.00	0.00	4.27	9.78	20.00
10.00	14.00	10.00	0.00	0.00	1.30	3.51	
35.00	65.00	25.00	30.00	35.00	45.17	12.68	
9.00	5.00	9.00	9.00	9.00	14.63	9.99	
45.00	15.00	55.00	60.00	55.00	37.60	14.27	
1.00	1.00	1.00	1.00	1.00	1.30	0.78	
28.57	38.46	80.00	83.33	42.86	56.39	19.48	
0.00	0.00	0.00	0.00	0.00	0.47	2.51	
71.43	61.54	20.00	16.67	57.14	43.14	19.87	

ANDALEX
Wildcat Loadout
Sagebrush/Grass Reference Area
Exposure: NE
Slope: 3 deg
Sample Date: 19 July 2007
-
TREES & SHRUBS
Artemisia nova
Artemisia tridentata
Ceratoides lanata
Chrysothamnus nauseosus
Gutierrezia sarothrae
Opuntia polyacantha
Pinus edulis

FORBS
Sphaeralcea grossuilarifolia
Stanleya pinnata

GRASSES
Bouteloua gracilis
Hilaria jamesii
Hordeum jubatum
Poa secunda
Stipa hymenoides
-
COVER
Crypto
Total Living Cover
Litter
Bareground
Rock
-
% COMPOSITION
Shrubs
Forbs
Grasses
-

APPENDIX J

Probable Hydrologic Consequences of Operations at the Wildcat Loadout

Prepared for:
Andalex Resources, Inc.

Prepared by:
Blackhawk Engineering Company

July, 1988

Table of Contents

1.0 Introduction 1

2.0 Groundwater 1

2.1 Probable Impacts 1

2.1-1 Background Information 1

2.1-2 Potential Impacts 2

2.2 Groundwater Monitoring Plan 3

3.0 Surface Water 3

3.1 Probable Impacts 3

3.1-1 Background Information 3

3.1-2 Potential Impacts 4

3.2 Surface Water Monitoring Plan 4

4.0 Conclusions 5

5.0 References 5

List of Attachments

Attachment		Page
1	Stored Material Leachate Analyses	6
2	Acid-Toxic Forming Potentials	7
3	Engineers' Statement on Borehole Observations	8
4	Comparison of Leachate Tests to Utah Agricultural Water Quality Standards	9

Probable Hydrologic Consequences of Operations at the Wildcat Loadout

1.0 Introduction

The Wildcat Loadout is a coal loading/processing facility owned by Andalex Resources, Inc., and located in the Gordon Creek Area of Carbon County, Utah. Andalex Resources, Inc., is applying for a Mining and Reclamation Permit for the Wildcat Loadout in accordance with the "Utah Coal Mining and Reclamation Permanent Program" - Regulations Pertaining to Surface Effects of Underground Coal Mining Activities.

The purpose of this document is to present an assessment of the probable hydrologic consequences of the Wildcat Loadout operation. Where appropriate, references are made to sections of the Permit Application Package that have already addressed required items in detail.

This document is divided into five sections. Section 2.0 presents a discussion of groundwater in the area, along with potential impacts. Section 3.0 presents a similar discussion on surface water. Conclusions and references are listed in Sections 4.0 and 5.0 respectively.

2.0 Groundwater

2.1 Probable Impacts

2.1-1 Background Information

Information presented in Chapter III, Part C, Section 1.2 of the PAP indicate that groundwater is extremely scarce in the general area and essentially non-existent within the permit area. As indicated in this section, a series of boreholes were drilled from 45' to 60' deep for foundation analysis at the outset of construction, and none of the holes encountered water. Two of the 60' deep holes were left open and checked on a regular basis for any water accumulation- no accumulation was noted. A statement of observation is provided as Attachment 3 of this Appendix. This statement will serve as the record of checks on the boreholes and the results of those checks. The locations of the boreholes are shown on Figure 1 of Appendix C of this PAP.

The geologic location of the permit and surrounding area is discussed in detail in Chapters III and IV of this PAP. As indicated, the permit area is located in the Masuk Member of the Mancos Shale Formation. There are no springs or seeps located within the permit boundary. The nearest spring is located approximately 1/2 mile to the southwest and is shown on Figure III-2 of Chapter III as the Garley Canyon Spring. This is a small spring/seep, with flows typically less than 5 gpm and with poor quality typical of springs or seeps within the Mancos Shale. Rights to this spring are owned by Andalex Resources, Inc. A water analysis of the spring is provided in Appendix G.

There are no aquifer tests or other data available on groundwater in or near the permit area, due to the lack of groundwater. Leachate tests have been conducted on all materials stored on site. These tests were designed to show potential impact of leaching of the materials into the ground (and groundwater, if any were to exist). The tests show no potential for stored materials to impact any groundwater in the area. Results of the leachate tests are summarized in Attachment 1 of this Appendix. In addition, both the coal and coal waste material were tested for acid or toxic-forming potential. The results of these tests are shown in Attachment 2 of this Appendix. These tests also show no potential impact of the stored materials on the groundwater regime.

2.1-2 Potential Impacts

As with any operation where materials are stored on site, there is a potential for leaching of runoff or inherent moisture from the materials into the ground. Leachate and acid-toxic forming potential tests were performed on the materials, and the results indicate no adverse impacts would occur from the leaching or runoff from such materials.

The leachate data was compared to the Utah agricultural water quality standards to determine that no adverse impacts would

occur. This comparison is summarized in Attachment 4 of this PHC.

There is no aquifer or other groundwater occurrence within at least 60' of the surface within the permit area. This is confirmed by the drilling on site as described above. In fact, the nearest groundwater is likely much deeper in this area, as discussed in Chapter III, Part C, Section 1.2-2 of the PAP. The nearest occurrence of any groundwater is in the Garley Canyon Spring to the south. This is an alluvial spring/seep as discussed in Chapter III, Part C, Section 1.2-1 of the PAP, and is recharged from the higher elevation terraces to the west.

Since there is no groundwater known to exist within or near the permit area, and since the leachate tests show no potential for acid or toxic materials, it can be concluded that there will be no adverse impacts on the groundwater regime by the operation of the Wildcat Loadout.

2.2 Groundwater Monitoring Plan

Since no groundwater exists within or near the permit area, there is no groundwater monitoring plan for this operation.

3.0 Surface Water

3.1 Probable Impacts

3.1-1 Background Information

As discussed in Chapter III, Part C, Section 1.3-2.1 of the PAP, the Wildcat Loadout is located in the lower Gordon Creek Drainage. The permit and adjacent area is drained by ephemeral drainages which flow into the ephemeral Garley Canyon Drainage and eventually into the Price River to the east. The nearest spring is the Garley Canyon Spring located approximately 1/2 mile to the southwest of the permit area. This is an alluvial spring/seep and is characterized by low flows and poor quality. The spring outcrops near the railroad tracks at Garley Canyon and disappears within a short distance downstream. The nearest perennial streams

are: North Fork of Gordon Creek located approximately 1-1/2 miles to the south; and the Price River, located approximately 3-1/2 miles to the east.

3.1-2 Potential Impacts

Runoff from all disturbed areas of the operation is directed into sedimentation facilities or contained within bermed areas (Small Area Exemptions). All runoff and sediment control facilities are designed in accordance with Division regulations, and are maintained to minimize sediment concentrations from the surface facilities to the receiving drainage. Sediment ponds have NPDES Discharge Permits, which further restrict effluent standards for any discharge from the property.

Undisturbed drainage is diverted around the operation as shown on Plate 2 of the PAP. These diversions are designed and maintained to prevent undisturbed runoff from entering the disturbed area.

Existing (and proposed) facilities as described in this PAP are adequate to control runoff from the operation and will minimize sediment concentrations to the receiving drainages. Proper maintenance of the sediment control facilities will continue to minimize potential impacts of the operation on surface waters. See Chapter IV for details on sediment control facilities.

3.2 Surface Water Monitoring Plan

A surface water monitoring plan has been described in Chapter IV, Part K, Section 8 of the PAP. This plan will monitor drainages above and below the operation, as well as any sediment pond discharges.

Baseline water monitoring results are summarized in Appendix M of this PAP.

4.0 Conclusions

The following conclusions are presented, based on information included in this Appendix as well as referenced information from the Permit Application Package (PAP):

- No groundwater is known to exist within or near the permit area.
- Leachate and acid-toxic forming potential analyses indicate no adverse impacts from stored materials.
- No adverse impacts to the groundwater regime will occur as a result of this operation.
- No perennial or intermittent drainages exist within or near the permit area.
- Existing (and proposed) sediment and runoff control facilities are adequate to prevent additional sediment contributions to receiving drainages.
- With proper maintenance of surface water control facilities, no adverse impacts will occur to the surface waters of the area as a result of this operation.
- Surface waters will be monitored to detect any possible impact as a result of the operation.

5.0 References

Cordova, R.M., 1964, "Hydrogeologic Reconnaissance of Part of Head Waters Area of the Price River, Utah", Utah Geological and Mineral Survey, Water Resources Bulletin 4, p. 26.

Fisher, D.J., Erdmann, C.E., and Reeside, J.B., 1960. "Cretaceous and Testing Formation of the Book Cliffs, Carbon, Emery and Grand Counties, Utah, and Garfield and Mesa Counties, Colorado", U.S. Geological Survey, Professional Paper 332, p. 80.

Price, D. and Arnow, T., 1974. Summary Appraisals of the Nation's Groundwater Resources - Upper Colorado Region. U.S. Geological Survey Professional Paper 813-C, 40 pp.

Waddell, K.M., and other, 1981. Hydrologic Reconnaissance of the Wasatch Plateau, Book Cliffs Fields Areas, Utah. USGS Water Supply Paper 2068.

Attachment 1

Stored Material

Leachate Analyses

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020, HUNTINGTON, UT 84528
TELEPHONE: (801) 653-2311

May 23, 1988

Job No.: 9233

Date Rec'd: May 11, 1988

Date Sampled: May 11, 1988

Sampled By: ANDALEX

Sample ID:

COAL
No Time Sampled
Time Rec'd 3:00 p.m. hr.

Andalex
P.O. Box 902
Price, Utah 84501

RECEIVED
MAY 26 1988
ANDALEX RESOURCES, INC.

WATER ANALYSIS

Aluminum 05/16/88	0.18	mg/l	Fluoride 05/18/88	0.24	mg/l
Alk., Bicarbonate 05/12/88	270	mg/l HCO3	Hardness, Total	320	mg/l CaCO3
Alk., Carbonate 05/12/88	1<	mg/l CaCO3	Iron, Dissolved 05/13/88	0.12	mg/l
Arsenic 05/17/88	0.003	mg/l	Lead 05/15/88	0.030	mg/l
Anions, Total	7.74	meq/l	Magnesium 05/13/88	24.50	mg/l
Barium 05/16/88	0.09	mg/l	Manganese 05/13/88	0.02	mg/l
Boron 05/17/88	0.13	mg/l	Mercury 05/16/88	0.002<	mg/l
Cadmium 05/15/88	0.002	mg/l	Molybdenum 05/18/88	0.10<	mg/l
Calcium 05/13/88	87.6	mg/l	Nickel 05/15/88	0.03	mg/l
Cations, Total	8.12	meq/l	Nitrogen, Ammonia 05/19/88	0.10	mg/l
Chloride 05/17/88	37.5	mg/l	Nitrogen, Nitrate 05/12/88	0.10	mg/l
Chromium 05/16/88	0.04	mg/l	Nitrogen, Nitrite 05/12/88	0.02	mg/l
Conductivity 05/11/88	750	umhos/cm	Oil and Grease 05/16/88	4.0	mg/l
Copper 05/15/88	0.010<	mg/l	Oxygen, Dissolved 05/11/88	5.2	mg/l

ANALYST: D. Lyon

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Dave Councilley

Manager, Huntington Laboratory

Original Copy Watermarked
For Your Protection

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020, HUNTINGTON, UT 84528
TELEPHONE: (801) 653-2311

May 23, 1988

Job No.: 9233

Date Rec'd: May 11, 1988

Date Sampled: May 11, 1988

Sampled By: ANDALEX

Sample ID:

COAL
No Time Sampled
Time Rec'd 3:00 p.m. hr.

Andalex
P.O. Box 902
Price, Utah 84501

RECEIVED
MAY 26 1988
ANDALEX RESOURCES, INC.

WATER ANALYSIS

pH	7.60	Units	Solids, Dissolved	433.0	mg/l
05/11/88			05/13/88		
Phosphorus, Total	0.04	mg/l	Solids, Setteable	1.0<	mg/l
05/20/88			05/12/88		
Potassium	3.07	mg/l	Solids, Suspended	12.0	mg/l
05/13/88			05/13/88		
Selenium	0.004	mg/l	Sulfate	115.0	mg/l
05/19/88			05/13/88		
Sodium	38.50	mg/l	Sulfide	5.50	mg/l
05/13/88			05/19/88		

ANALYST: D. Tipon

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Dave Councell by DT

Manager, Huntington Laboratory

iginal Copy Watermarked
For Your Protection

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020, HUNTINGTON, UT 84528
TELEPHONE: (801) 653-2311

May 23, 1988

Job No.: 9232a

Date Rec'd: May 11, 1988

Date Sampled: May 11, 1988

Sampled By: Andalex

Sample ID:

BONE WILDCAT
No Time Sampled
Time Rec'd 3:00 p.m. hr.

RECEIVED
MAY 26 1988
ANDALEX RESOURCES, INC.

Andalex
P.O. Box 902
Price, Utah 84501

WATER ANALYSIS

Aluminum 05/16/88	0.24	mg/l	Fluoride 05/18/88	0.32	mg/l
Alk., Bicarbonate 05/12/88	296	mg/l HCO3	Hardness, Total	337	mg/l CaCO3
Alk., Carbonate 05/12/88	1<	mg/l CaCO3	Iron, Dissolved 05/13/88	0.27	mg/l
Arsenic 05/17/88	0.005	mg/l	Lead 05/15/88	0.040	mg/l
Anions, Total	8.93	meq/l	Magnesium 05/13/88	29.90	mg/l
Barium 05/16/88	0.09	mg/l	Manganese 05/13/88	0.02	mg/l
Boron 05/17/88	0.11	mg/l	Mercury 05/16/88	0.002<	mg/l
Cadmium 05/17/88	0.002	mg/l	Molybdenum 05/18/88	0.10<	mg/l
Calcium 05/13/88	85.6	mg/l	Nickel 05/15/88	0.02<	mg/l
Cations, Total	8.54	meq/l	Nitrogen, Ammonia 05/19/88	0.12	mg/l
Chloride 05/17/88	52.5	mg/l	Nitrogen, Nitrate 05/12/88	0.06	mg/l
Chromium 05/16/88	0.03	mg/l	Nitrogen, Nitrite 05/12/88	0.03	mg/l
Conductivity 05/11/88	800	umhos/cm	Oil and Grease 05/16/88	6.0	mg/l
Copper 05/15/88	0.010<	mg/l	Oxygen, Dissolved 05/11/88	5.4	mg/l

ANALYST: D. Tyson

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Dave Councilly

Manager, Huntington Laboratory

iginal Copy Watermarked
For Your Protection

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020, HUNTINGTON, UT 84528
TELEPHONE: (801) 653-2311

May 23, 1988

Job No.: 9232a

Date Rec'd: May 11, 1988

Date Sampled: May 11, 1988

Sampled By: Andalex

Sample ID:

BONE WILDCAT
No Time Sampled
Time Rec'd 3:00 p.m. hr.

Andalex
P.O. Box 902
Price, Utah 84501

RECEIVED
MAY 23 1988
ANDALEX RESOURCES, INC.

WATER ANALYSIS

pH	7.63	Units	Solids, Dissolved	416.0	mg/l
05/11/88			05/13/88		
Phosphorus, Total	0.04	mg/l	Solids, Setteable	1.0<	mg/l
05/20/88			05/12/88		
Potassium	3.92	mg/l	Solids, Suspended	26.0	mg/l
05/13/88			05/13/88		
Selenium	0.002<	mg/l	Sulfate	129.0	mg/l
05/19/88			05/13/88		
Sodium	39.70	mg/l	Sulfide	0.30	mg/l
05/13/88			05/19/88		

ANALYST: D. Lyon

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Dave Councell by DT

Manager, Huntington Laboratory

riginal Copy Watermarked
For Your Protection

Attachment 2

Acid-Toxic Forming Potentials

ANDALEX
RESOURCES, INC.
Tower Division

P.O. BOX 902
PRICE, UTAH 84501
PHONE (801) 637-5385
TELEX 381 530 ANDALEX PRIC

July 22, 1988

Utah State University
Logan, Utah 84322-4830

Attn.: Mr. Karl Topper, Soils Plant and Water Laboratory

Dear Mr. Topper:

Enclosed please find samples taken from Andalex Resources' Coal and "Boney" Storage Piles located at the Wildcat Loadout Facility. The Division of Oil, Gas, and Mining is requiring these samples be tested for acid and toxic forming materials. The tests which they require include:

Acid-Base Potential
pH
Ec
Saturation Percent
Texture
Organic C
SAR
Selenium
Boron

The samples are labeled Coal and "Boney" and have been crushed to a top size of #8 mesh. Please advise me by telephone at 637-5385 if pre-payment for this analysis is required.

Thank you very much.

Sincerely,

Michael W. Glasson
Senior Geologist
Western Division

MWG/as

Enclosures

cc: File

UTAH STATE UNIVERSITY · LOGAN, UTAH 84322

SOIL, PLANT and WATER
ANALYSIS LABORATORY
UMC 48

August 23, 1988

Andalex Resources, INC.
Michael W. Glasson
PO Box 902
Price, UT 84501

Coal samples received 8/2/88.

Non-Typical Soil: Test Results May Be Unreliable.

USU LOG#	ID	%$CaCO_3$	%Sulfur	%O.M.	mg/l Boron	Saturation Percentage	SAR	pH	mmhos/cm ECe	*Texture
2447	Coal	.8	.53	96.6	0.5	64.6	.5	7.6	.7	93.9% Sand
2448	Boney	9.5	1.02	74.4	1.3	52.8	1.2	7.4	1.9	90.6% Sand

*Texture: % Retained on 300 Mesh Sieve.

Y Torres.

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020, HUNTINGTON, UT 84528
TELEPHONE: (801) 653-2311

ANDALEX RESOURCES, INC.
P.O. Box 902
Price, UT 84501

February 23, 1989

Sample identification by: Andalex Resources, Inc.

Kind of sample reported to us	Soil
Sample taken at	Wildcat
Sample taken by	Andalex Resources, Inc.
Date sampled	xxxxx
Date received	October 11 and October 13, 1988

Boney Coal and Coal

Analysis report no. 59-84506 and 84507

		% Nitrate Nitrogen
84506	Boney Coal	.10
84507	Coal	.07

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Huntington Laboratory

iginal Copy Watermarked
For Your Protection

Attachment 3

Engineers' Statement
on
Borehole Observations

ANDALEX
RESOURCES, INC.
Tower Division

P.O. BOX 902
PRICE, UTAH 84501
PHONE (801) 637-5385
TELEX 381 530 ANDALEX PRIC

July 27, 1988

Mr. John Whtiehead
Permit Supervisor
State of Utah
Dept. of Natural Resources
Division of Oil, Gas & Mining
355 West North TEmple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Mr. Whitehead:

This letter is to confirm that observation tests were made on two (2) bore holes located at the Wildcat loadout to determine the presence of ground water at this facility. (Reference; Rollins, Brown and Gunnel report regarding bore hole locations and depths). Observations were made over a two month period in the Spring of 1982 during the months of May and June. Observations were made on a weekly basis using a hand made measuring probe. At no time did any ground water appear in the bore holes. The bore holes were then sealed following this observation. The observations were performed by David Shaver, Andalex Resource's chief engineer.

Sincerely,

Michael W. Glasson
Senior Geologist
Western Operations

MWG/amr

Attachment 4

Comparison of Leachate Tests
to
Utah Agricultural Water Quality Standards

Comparison of Leachate Tests to Utah Agricultural Water Quality Standards

Parameter	Leachate (mg/l)	Agricultural Standard (mg/l max.)
Aluminum	0.18	---
Alk. (Bi-carb)	270	---
Alk. (Carb.)	<1	---
Arsenic	0.003	0.10
Anions (Total)	7.74	---
Barium	0.09	---
Boron	0.13	0.75
Cadmium	0.002	0.01
Calcium	87.6	---
Cations (Total)	8.12	---
Chloride	37.5	---
Chromium	0.04	0.10
Conductivity	750	---
Copper	<0.010	0.20
Flouride	0.24	---
Hardness, Total	320	---
Iron, Dissolved	0.12	---
Lead	0.030	0.10
Magnesium	24.50	---
Manganese	0.02	---
Mercury	<0.002	---
Molybdenum	<0.10	---
Nickel	0.03	---
Nitrogen, Ammonia	0.10	---
Nitrogen, Nitrate	0.10	---
Nitrogen, Nitrite	0.02	---
Oil and Grease	4.0	---
Oxygen, Dissolved	5.2	---
pH	7.60	6.5-9.0
Phosphorus, Total	0.04	---
Potassium	3.07	---
Selenium	0.004	0.05
Sodium	38.50	---
Solids, Dissolved	433.0	1200.0
Solids, Settleable	<1.0	---
Solids, Suspended	12.0	---
Sulfate	115.0	---
Sulfide	5.50	---
Gross Alpha (pCi/l)	N/A	15
Gross Beta (pCi/l)	N/A	50
BOD (mg/l)	N/A	5

Utah Division of Health numerical standards for water in the state.

Constituent	CLASSES: Domestic Source 1A	1B	1C	Recreation & Aesthetics 2A	2B	Aquatic Wildlife 3A	3B	3C	3D	Agriculture (4)	Industry 5	Special 6
Bacteriological (No./100 ml)												
(30-day Geometric Mean)												
Maximum Total Coliforms	1	50	5,000	1,000	5,000	•	•		•	•		
Maximum Fecal Coliforms	•	•	2,000	200	2,000	•	•		•	•		
Physical												
Total Dissolved Gasses	•	•	•	•	•	(b)	(b)		•	•		
Minimum DO (mg/l) (a)	•	•	5.5	5.5	5.5	6.0	5.5		5.5	•		
Maximum Temperature	•	•	•	•	•	20°C	27°C		•	•		
Maximum Temp. Change	•	•	•	•	•	2°C	4°C		•	•		
pH	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0		6.5-9.0	6.5-9.0		
Turbidity increase (c)	•	•	•	10 NTU	10 NTU	10 NTU	10 NTU		15 NTU	•		
Chemical (Maximum mg/l)												
Arsenic, dissolved	.05	.05	.05	•	•	•	•		•	•		
Barium, dissolved	1	1	1	•	•	•	•		•	.1		
Cadmium, dissolved	.010	.010	.010	•	•	.0004(d)	.004(d)		•	•		
Chromium, dissolved	.05	.05	.05	•	•	.10	.10		.10	.01		
Copper, dissolved	•	•	•	•	•	.01	.01		•	.10		
Cyanide	•	•	•	•	•	.005	.005		•	.2		
Iron, dissolved	•	•	•	•	•	1.0	1.0		1.0	•		
Lead, dissolved	.05	.05	.05	•	•	.05	.05		•	.1		
Mercury, total	.002	.002	.002	•	•	.00005	.00005		.00005	•		
Phenol	•	•	•	•	•	.01	.01		•	•		
Selenium, dissolved	.01	.01	.01	•	•	.05	.05		•	.05		
Silver, dissolved	.05	.05	.05	•	•	.01	.01		•	•		
Zinc, dissolved	•	•	•	•	•	.05	.05		•	•		
NH_3 as N (un-ionized)	•	•	•	•	•	.02	.02		•	•		
Chlorine	•	•	•	•	•	.002	.01		•	•		
Fluoride, dissolved (e)	1.4-2.4	1.4-2.4	1.4-2.4	•	•	•	•		•	•		
NO_3 as N	10	10	10									
Boron, dissolved	•	•	•	•	•	•	•		•	•		
H_2S	•	•	•	•	•					.75		
TDS (f)	•	•	•	•	•	.002	.002		•	•		
						•	•		•	1200		
Radiological (Maximum pCi/l)												
Gross Alpha	15	15	15	•	•	15(g)	15(g)		15(g)	15(g)		
Radium 226, 228 combined	5	5	5	•	•	•	•		•	•		
Strontium 90	8	8	8	•	•	•	•		•	•		
Tritium	20,000	20,000	20,000	•	•	•	•		•	•		
Pesticides (Maximum ug/l)												
Endrin	.2	.2	.2	•	•	.004	.004		.004	•		
Lindane	4	4	4	•	•	.01	.01		.01	•		
Methoxychlor	100	100	100	•	•	.03	.03		.03	•		
Toxaphene	5	5	5	•	•	.005	.005		.005	•		
2, 4-D	100	100	100	•	•	•	•		•	•		
2, 4, 5-TP	10	10	10	•	•	•	•		•	•		
Pollution Indicators (g)												
Gross Beta (pCi/l)	50	50	50	•	•	50	50		50	50		
BOD (mg/l)	•	•	5	5	5	5	5		5	5		
NO_3 as N (mg/l)				4	4	4	4		•	•		
PO_4 as P (mg/l)(h)	•	•	•	.05	.05	.05	.05		•	•		

STANDARDS WILL BE DETERMINED ON A CASE-BY-CASE BASIS (SEE APPENDIX D)

STANDARDS WILL BE DETERMINED ON A CASE-BY-CASE BASIS

STANDARDS WILL BE DETERMINED ON A CASE-BY-CASE BASIS

• Insufficient evidence to warrant the establishment of numerical standard. Limits assigned on case-by-case basis.

(a) These limits are not applicable to lower water levels in deep impoundments.

(b) Not to exceed 110% of saturation.

(c) For Classes 2A, 2B, 3A, and 3B at background levels of 100 NTUs or greater, a 10% increase limit will be used instead of the numeric values listed. For Class 3D at background levels of 150 NTUs or greater, a 10% increase limit will be used instead of the numeric value listed. Short term variances may be considered on a case-by-case basis.

(d) Limit shall be increased threefold if $CaCO_3$ hardness in water exceeds 150 mg/l.

(e) Maximum concentration varies according to the daily maximum mean air temperature.

Temp. °C	mg/l
12.0 and below	2.4
12.1 to 14.6	2.2
14.7 to 17.6	2.0
17.7 to 21.4	1.8
21.5 to 26.2	1.6
26.3 to 32.5	1.4

(f) Total dissolved solids (TDS) limit may be adjusted on a case-by-case basis.

(g) Investigations should be conducted to develop more information where these pollution indicator levels are exceeded.

(h) PO_4 as P(mg/l) limit for lakes and reservoirs shall be .025.

STANDARD LABORATORIES, INC.

ER

TOWER RESOURCES
PO BOX 902
PRICE, UT 84501

BRANCH CODE (SEE REVERSE) 43
LAB NO. 51355
DATE REC. 4-8-85
DATE SAMPLED 4-8-85
SAMPLED BY SAVAGE

MPLE ID

DW 285

RECEIVED
MAR 17 1986
TOWER RESOURCES, INC.

Forms of Sulfur:	% Dry Basis
Total	0.50
Organic	0.45
Pyritic	0.04
Sulfate	< 0.01

FOR YOUR PROTECTION THIS DOCUMENT HAS BEEN PRINTED ON CONTROLLED PAPER STOCK

RESPECTFULLY SUBMITTED,

STANDARD LABORATORIES, INC.

[redacted]ER

TOWER RESOURCES
PO BOX 902
PRICE, UT 84501

BRANCH CODE (SEE REVERSE) 43
LAB NO. 51356
DATE REC. 4-8-85
DATE SAMPLED 4/3 & 5/85
SAMPLED BY SAVAGE

,MPLE ID

DW 286 287

RECEIVED
MAR 17 1986
ANDALEX RESOURCES, INC.

Forms of Sulfur:	% Dry Basis
Total	0.49
Organic	0.43
Pyritic	0.05
Sulfate	< 0.01

FOR YOUR PROTECTION THIS DOCUMENT HAS BEEN PRINTED ON CONTROLLED PAPER STOCK

RESPECTFULLY SUBMITTED,

THIS APPENDIX HAS BEEN DELETED

6.7.2 Types of Grade Control Structures

Grade control structures can range in complexity from simple rock riprap type drop structures to concrete structures with baffled aprons and stilling basins. For the range of discharges and velocities typically expected on a surface mine site, and considering the construction techniques typically employed, only the design of rock riprap structures is covered in this manual. Figure 6.9 illustrates a loose rock drop structure.

General guidelines for construction of loose rock drop structures constructed in mild slope channels are similar to stone check dams. The following specific recommendations are made:

1. Maximum drop height of three feet (guidelines for designing loose rock drop structures for drop heights greater than three feet are given in the Part 2.

2. Top width no less than five feet.

3. Downstream slope of 2 horizontal to 1 vertical.

4. 25 percent of the rock by volume will be 18 inches or larger. The remaining 75 percent shall be well graded material consisting of sufficient rock small enough to fill the voids between the larger rocks.

5. Energy dissipation should be provided at the downstream toe of a structure with a small plunge pool and large rocks.

6.7.3 Design Procedure Involving Grade Control Structures

Development of the graphical design procedure presented below is detailed in Appendix D. The design procedure is based on an application of Shields' relation (Equation 6.3) and the Manning equation (Equation 4.13). The primary design relationship is

$$S = \frac{0.047\ (G_s - 1)\ D_{50}}{R} \qquad (6.11)$$

where S is the static equilibrium slope, G_s is the specific gravity of the bed and bank material, often assumed to be 2.65, D_{50} is the median riprap size available or the armor particle size present in the natural alluvium, and R is the hydraulic radius.

The relationship defining R for a given combination of Manning's n, discharge Q and D_{50} is given in Figures 6.10a to 6.10c, where K is defined as

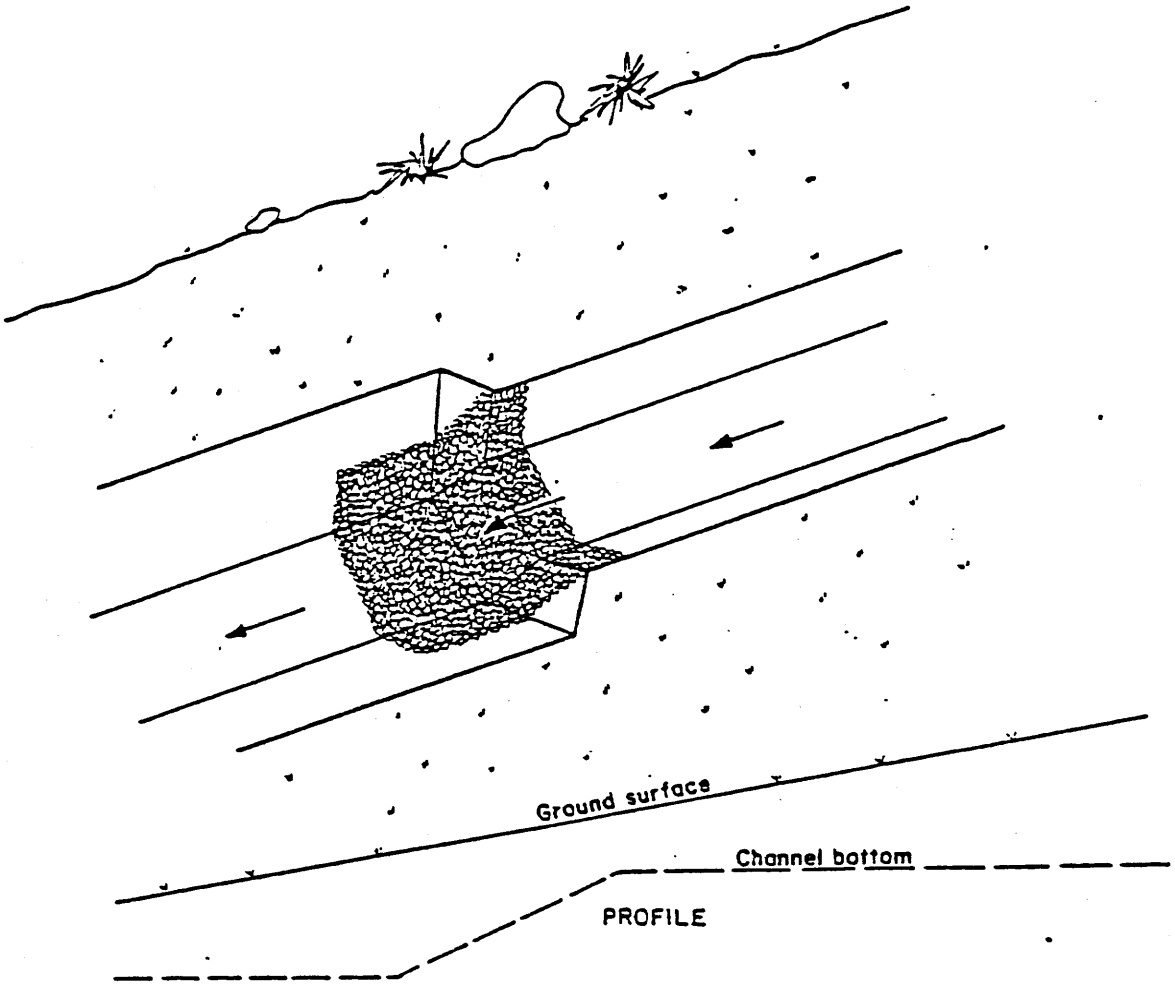


Figure 6.9. Definition sketch of a rock riprap drop structure (protection upstream and downstream according to Section 5.4).

$$K = \left(\frac{Qn}{0.323\sqrt{(G_s-1)\,D_{50}}}\right)^6 \qquad (6.12)$$

For values of K beyond the limits given in the figures, Equation D.9 in Appendix D must be solved.

The design procedure using these figures is simple to apply. After establishing the D_{50} of the available riprap, or the natural alluvium for development of an armor layer, the value of K is computed for the design flow Q and the representative Manning n. For gravel-cobble size rock Equation 4.18 gives a good estimate of the Manning n. With K established, the value of R is determined from the graphs. Equation 6.11 can then be solved for the static equilibrium slope required to maintain stability for the given D_{50} and flow conditions. If the natural terrain slope is less than the computed static equilibrium slope, the riprap will be stable without the need for drop structures. Otherwise, drop structures will be needed to establish the required slope.

6.7.4 Spacing of Grade Control Structures

If the above computation indicates grade control structures are required, the number and spacing of the structures must be determined. The vertical height that must be controlled for the given reach to achieve the required static equilibrium slope can be evaluated from

$$\Delta H = (S_o - S)\,\Delta X \qquad (6.13)$$

where ΔH is the total height requiring structural control, S_o is the original channel slope, S is the estimated static equilibrium slope, and ΔX is the length of channel to be controlled.

To prevent highly erosive velocities at the base of a rock riprap drop structure, the maximum allowable height of the structure is three feet. Therefore, the number of structures N required to control the total vertical height is

$$N = \frac{\Delta H}{3} \qquad (6.14)$$

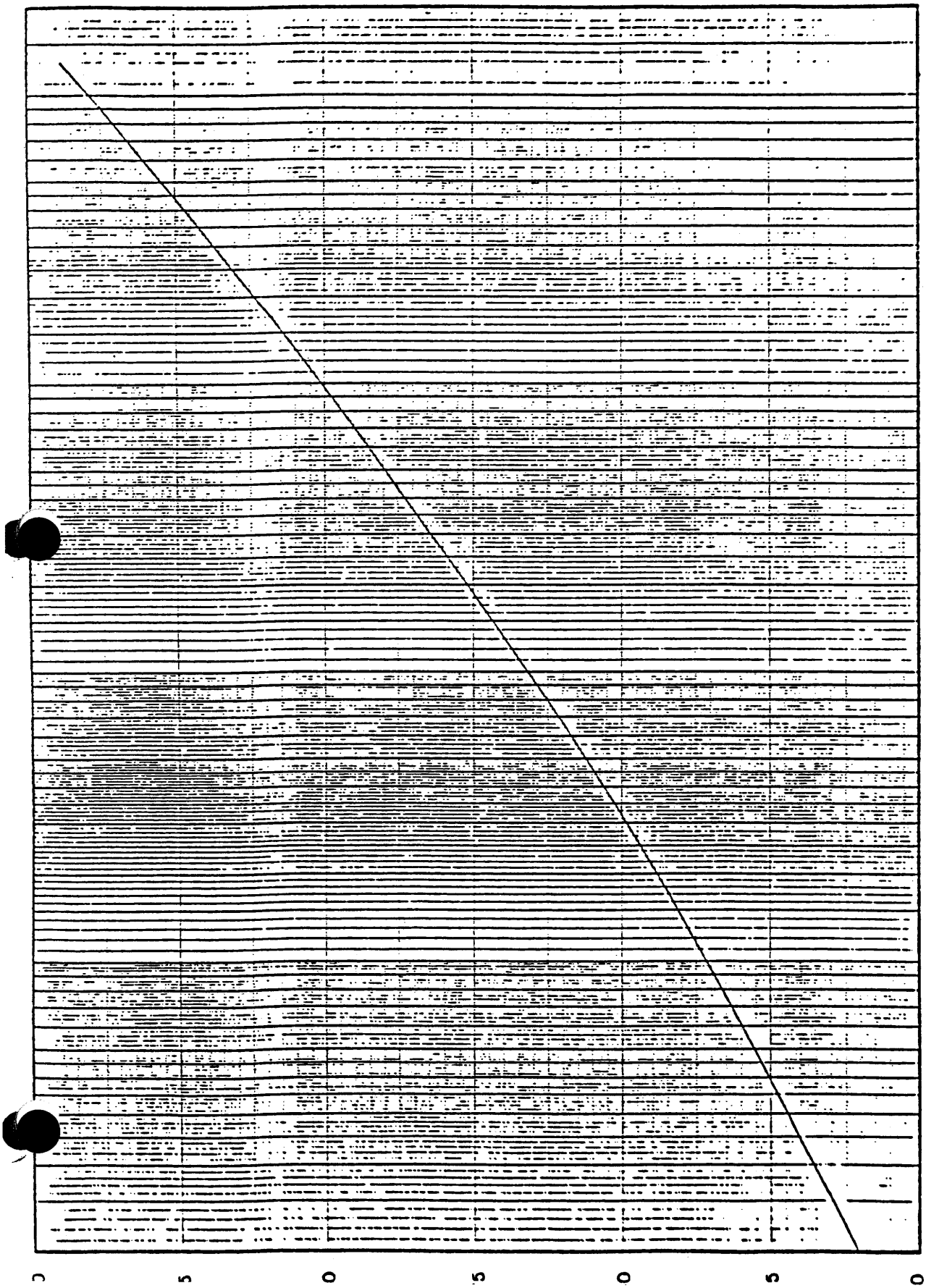


Figure 6.10a. Relationship between hydraulic radius R and K for trapezoidal channel with 2:1 side slopes and 6-foot base width.

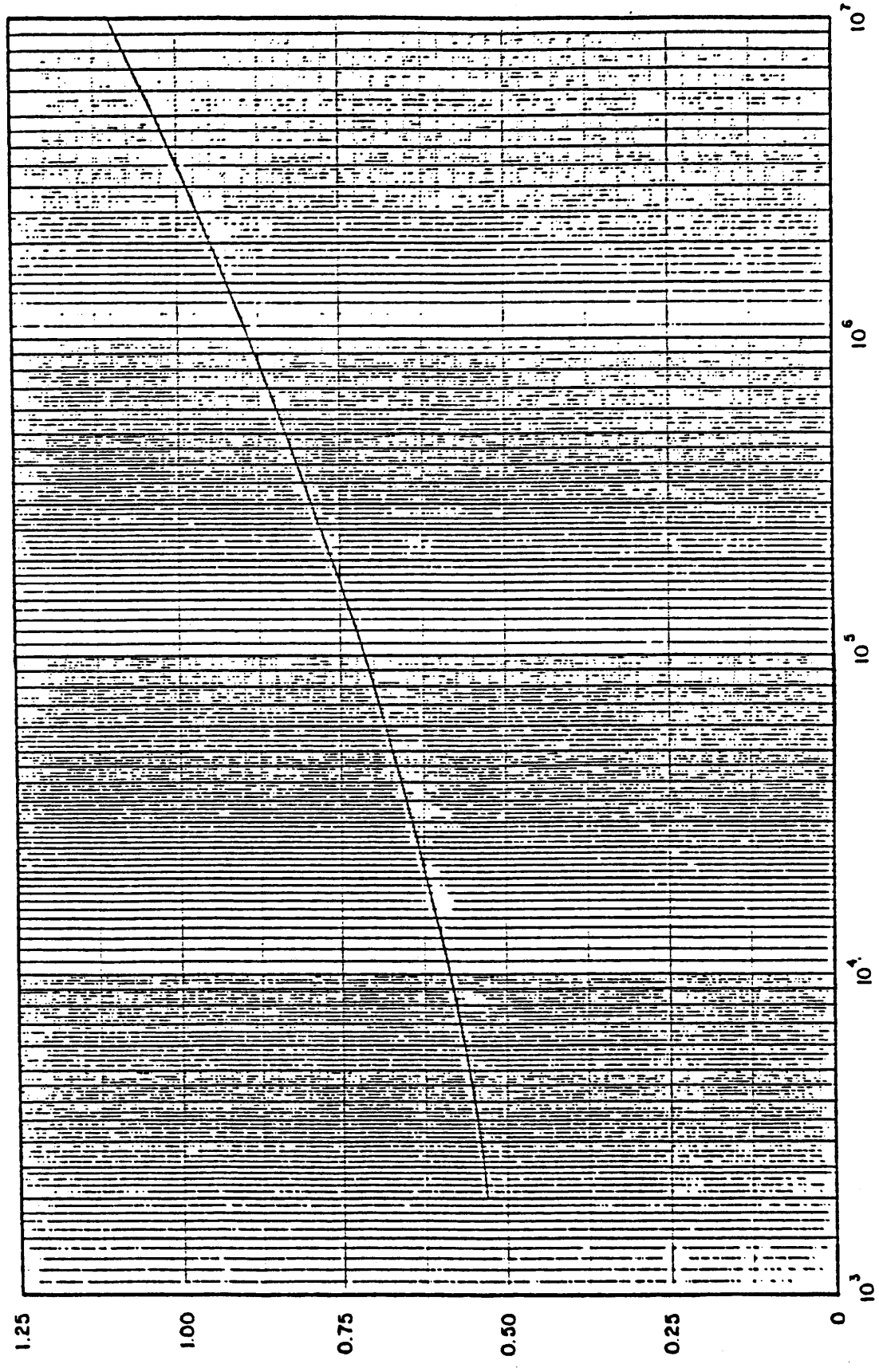


Figure 6.10a. Relationship between hydraulic radius R and K for trapezoidal channel with 2:1 side slopes and 6-foot base width. (continued).

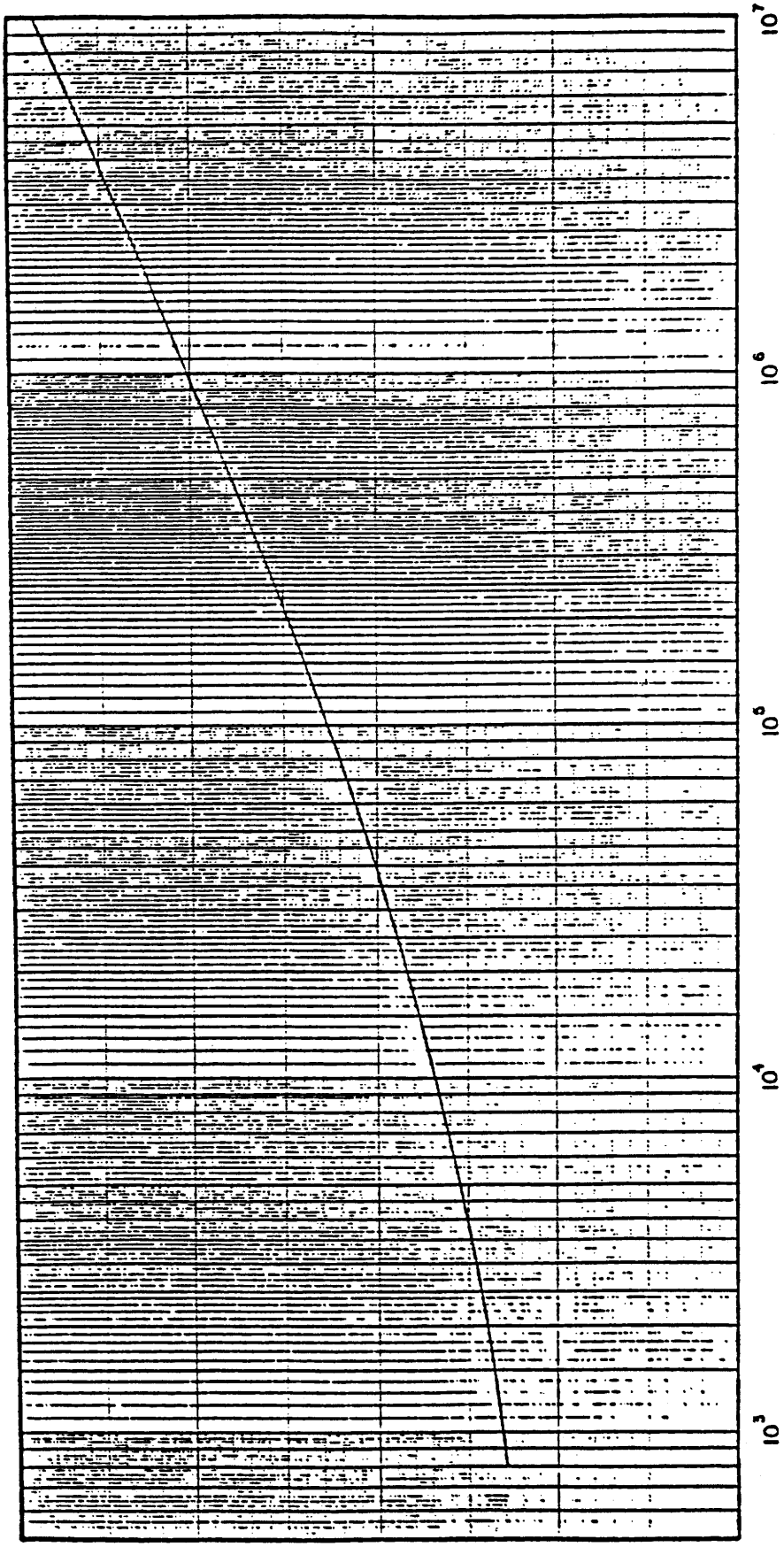


Figure 6.10b. Relationship between hydraulic radius R and K for trapezoidal channel with 2:1 side slopes and 10-foot base width.

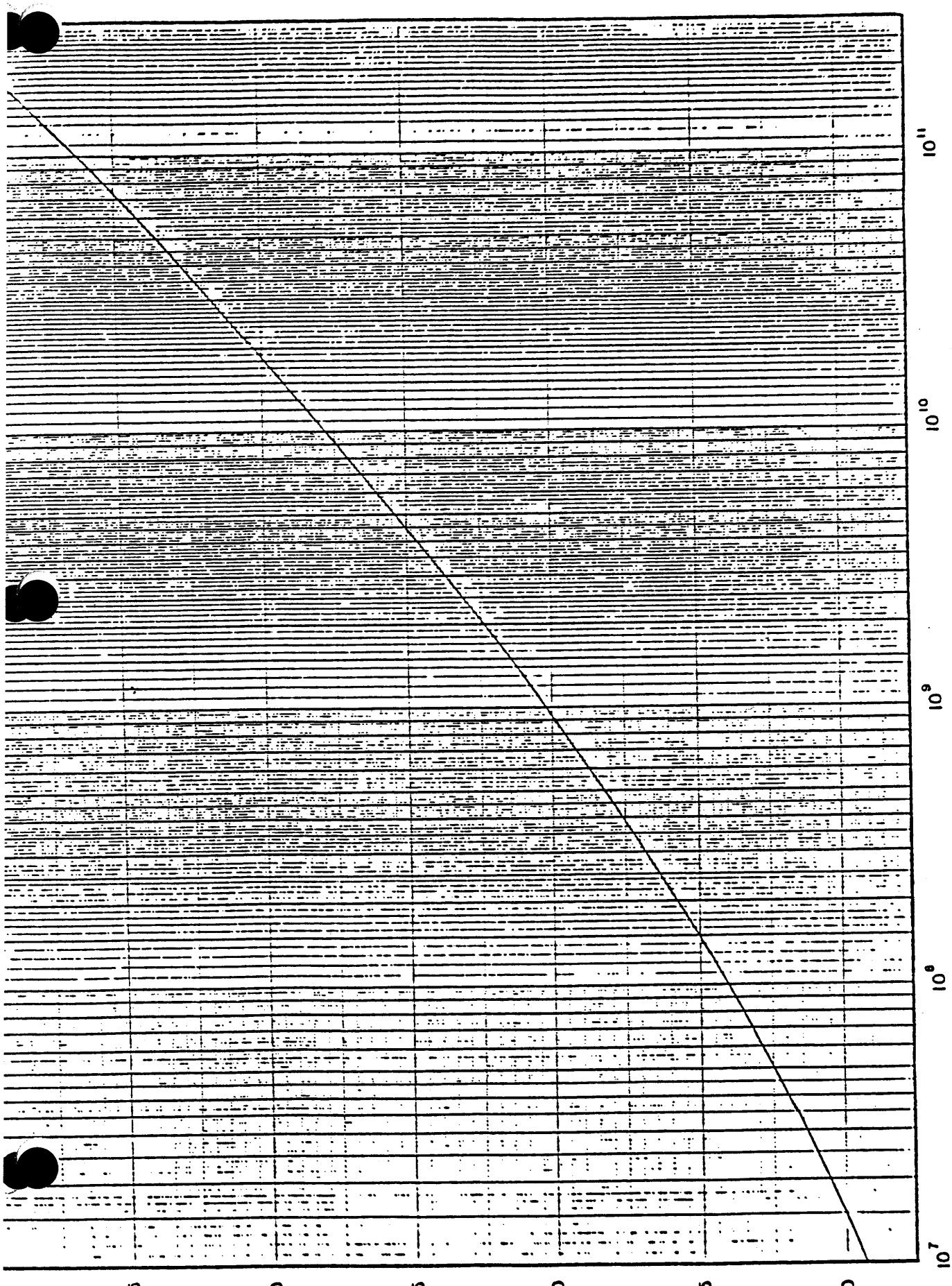


Figure 6.10b. Relationship between hydraulic radius R and K for trapezoidal channel with 2:1 side slopes and 10-foot base width (continued).

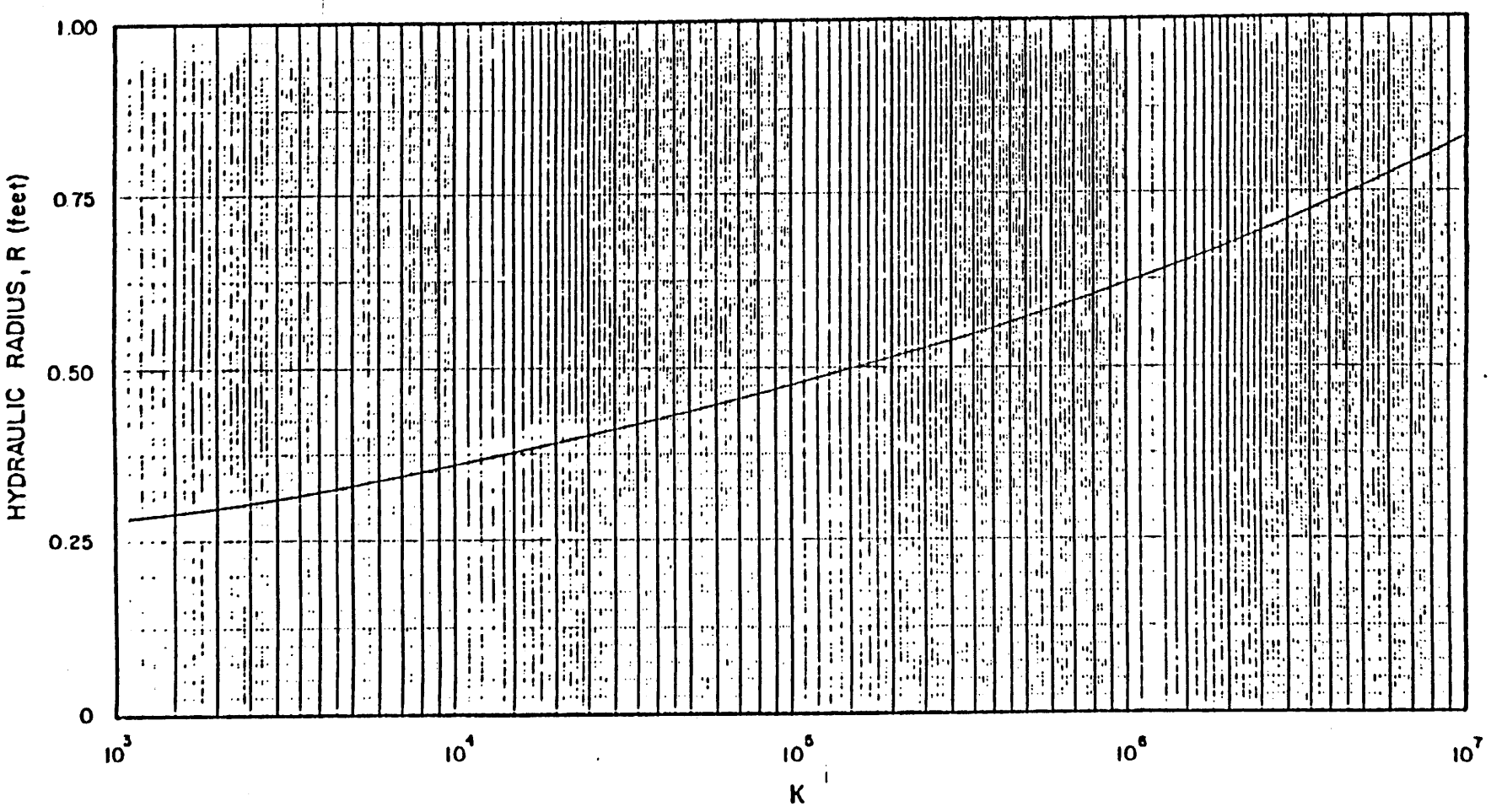


Figure 6.10c. Relationship between hydraulic radius R and K for trapezoidal channels with 2:1 side slopes and 14-foot base width.

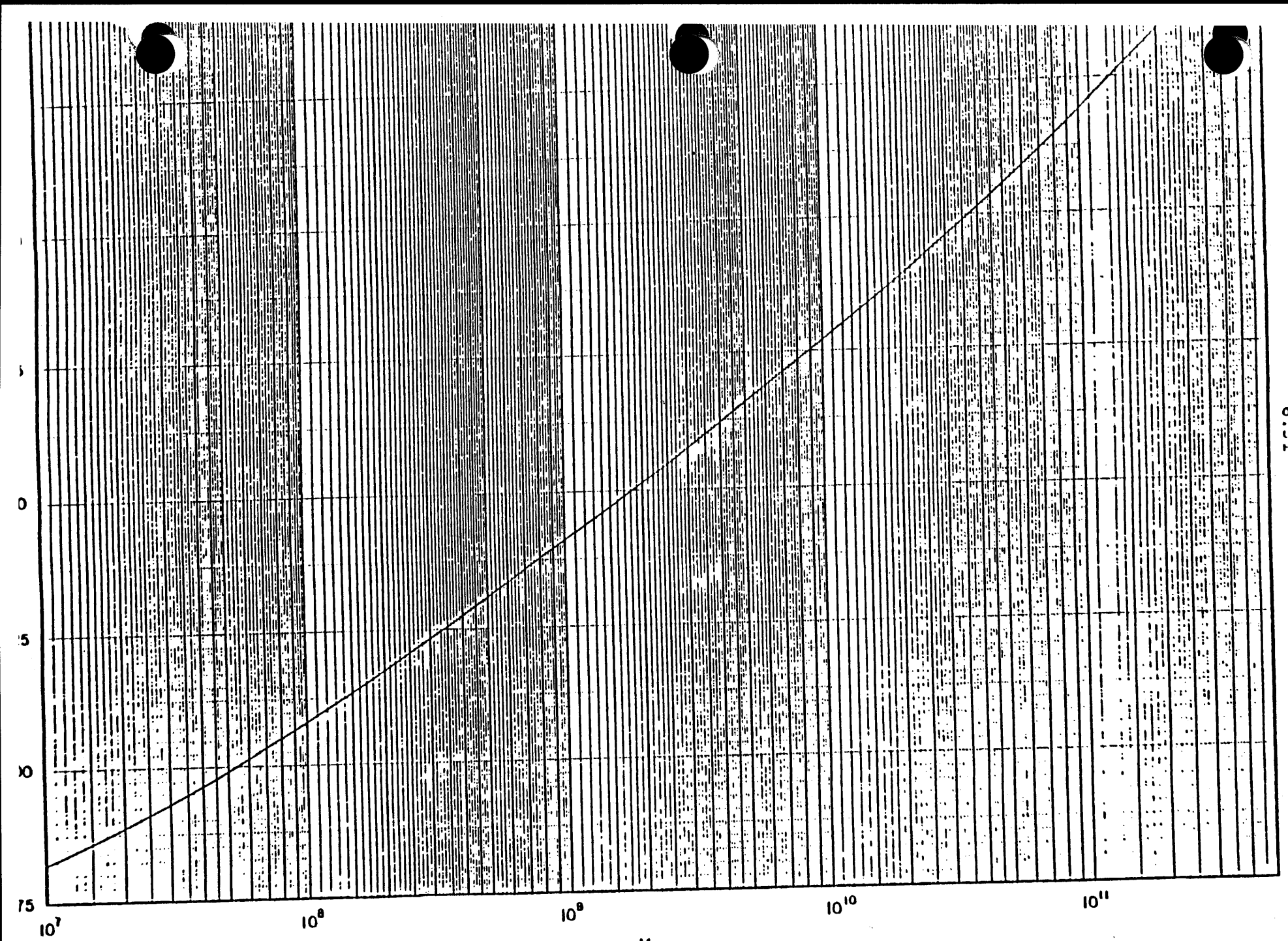


Figure 6.10c. Relationship between hydraulic radius R and K for trapezoidal channels with 2:1 side slopes and 14-foot base width (continued).

The spacing L of the drop structures is then

$$L = \frac{\Delta X}{N} \qquad (6.15)$$

6.7.5 Protection of Grade Control Structures

The velocity of flow on the downstream side of a drop structure can be quite high, creating the potential for local scour at the toe and possible undercutting of the structure. Therefore, a riprap transition between the toe and the downstream channel must be provided with adequate energy dissipation measures.

The method for determining the length of protection required below a grade control structure is identical to the procedure for protection below steep slopes presented in Section 5.4. A riprap layer should be extended below the structure for a distance equal five times the downstream depth of flow, but never less than 15 feet. Additionally a small plunge pool can be provided at the downstream toe to help dissipate energy.

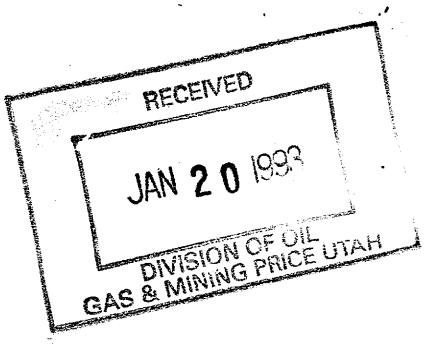
6.8 Design Procedure Summary

1. Design channel based on maximum permissible velocity method according to steps 1-6, Section 6.4.1.
2. Evaluate the channel for reasonable shape using Equations 6.7-6.10, and engineering judgment.
3. If a more hydraulically efficient channel is desired, evaluate the use of linings (vegetation or riprap) or grade control structures. Table 6.6 will aid in this evaluation.
   a. Vegetation
      1) Determine maximum permissible velocity for given vegetation type from Table 6.2.
      2) To design for stability, assume vegetation is mowed and identify retardance class from Table 6.3.
      3) Enter Figures 6.5a-e for given velocity, retardance and design slope to establish R.
      4) Calculate $A = Q/V$.
      5) Determine d for given b such that

THIS APPENDIX HAS BEEN DELETED

VEGETATION TEST PLOT MONITORING OF THE WILDCAT LOADOUT AREA

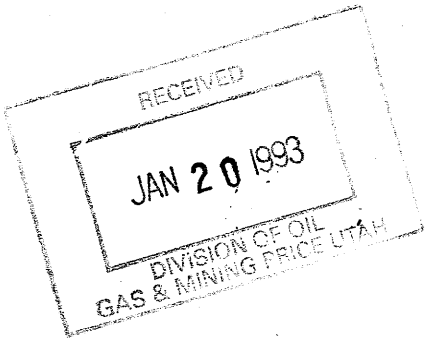
- 1991 -



Prepared by

MT. NEBO SCIENTIFIC RESEARCH & CONSULTING
Post Office Box 337
Springville, Utah 84663
(801) 489-6937

for
ANDALEX RESOURCES, INC.
P.O. Box 902
Price, Utah 84501



Report: Patrick D. Collins, Ph.D.

Fieldwork: Patrick D. Collins
Dean Collins

Report Date: February 1992

TABLE OF CONTENTS

INTRODUCTION 1

METHODS 2

Cover and Composition 2

Woody Species Density 3

Sample Adequacy 3

RESULTS 4

Plot A 4

Plot B 4

Plot C 5

Plot D 5

DISCUSSION 5

SUMMARY TABLES 7-15

VEGETATION TEST PLOT MONITORING OF THE WILDCAT LOADOUT AREA

- 1991 -

INTRODUCTION

The Wildcat Loadout is the site of a storage and loadout area for coal. The coal is loaded on truck or rail and transported from the area to consumers.

Disturbed areas from the loadout facility lies within a broad valley basin surrounded by rolling hills of shadscale and scattered pinyon-juniper plant communities. The valley basin is composed of alluvial soils and those derived from Mancos Shale, supporting big sagebrush and rabbitbrush communities.

Test plots were planted in the fall of 1989 to test revegetation feasibility of some of the on-site material. The four test plot areas were seeded, fertilized and mulched with straw. A list of the plant species that were seeded is shown on Table 9. Because 1991 was the second growing season following plot implementation and seeding, qualitative and quantitative data were collected on the site.

The four test plots were labeled A - D on data sheets and tables in this report. These plots were located in four different locations around the loadout facility.

METHODS

Quantitative and qualitative data were taken on the plots at the Wildcat Loadout facility on October 2, 1991. This date was prior to any significant frost in the area.

Cover and Composition

Regular placement of sample points were predetermined to provide unbiased accuracy of the data compiled. This was accomplished by establishing transect lines at regular intervals on each end of the plots. These transect lines were placed over the entire study area to adequately represent the area as a whole. Regular points on the transect lines were then marked. From these marks, the sample points were determined by random distance numbers at right angles to the transect lines.

Cover estimates were made using ocular methods with meter square quadrats. Species composition and relative frequencies were also assessed from the quadrats. Additional information

recorded on data sheets were: estimated precipitation, slope, exposure, grazing use, animal disturbance and other appropriate notes. Plant nomenclature follows Welsh et al. (1987) for nonplanted species. To avoid confusion, the same names were used as when they were planted for the species in the seed mixtures.

Woody Species Density

Because woody species densities were very low, all individuals were counted in each plot.

Sample Adequacy

Sample adequacy for cover was achieved employing a the formula below.

$$\left[\frac{1.28\ (s)}{x\ (.1)}\right]^2 = \text{nmin}$$

where:

x = sample mean
s = standard deviation
nmin = minimum number of samples.

RECEIVED
JAN 20 1993
DIVISION OF OIL
GAS & MINING PRICE, UTAH

RESULTS

Plot A

This relatively narrow, rectangular plot is located near a coal pile in the loadout area. Total living cover of the plot was 40.63% (Table 1). Most of that cover, however, were weedy species e.g. Russian Thistle (*Salsola iberica)* and Summer Cypress (*Kochia scoparia*). Three desirable plant species did occur in the quadrats, although collectively they represented less than 2% total cover. For a list of the cover by species, refer to Table 2. No woody plant species were observed for density measurements in this plot.

Plot B

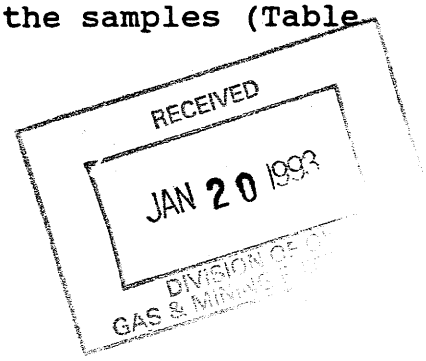
Plot B is located near the electrical substation and railroad tracks. Total living cover of this plot was estimated as 52.50% (Table 3). Nearly 30% of the living cover were desirable grass species (Table 3). Dominate plant species was Summer Cypress. The most common grass species were Western Wheatgrass (*Agropyron smithii*) and Indian Ricegrass (*Oryzopsis hymenoides*). For a list of cover by species, refer to Table 4. No shrubs were observed in the plot.

Plot C

Plot C is located near the railroad loading area. Total living cover was measured at 48.75% (Table 5). Again the same weedy forb species dominated the plot, comprising 99.43% of the total living cover (Table 5). No grasses were observed in the sample quadrats. There was, however, one desirable forb (Lewis flax or *Linum lewsii*) and one shrub (Four-winged Saltbush or *Atriplex canescens*) species observed infrequently in the quadrats (Table 6).

Plot D

The last plot to be sampled was Plot D. This plot was measured at 40.31% cover (Table 7). The quadrats sampled in this plot comprised exclusively of weedy annual forb species. No grasses or shrubs were found to be present in the samples (Table 8).



DISCUSSION

None of the four plots did particularly well to date if one considers the amount of desirable plant species that have begun

to establish themselves. However, one Plot B did noticeably better than the other plots and Plot C had a few shrubs beginning to establish.

MT. NEBO SCIENTIFIC was not involved at the time of implementation of the plots so we cannot rule out some of those early planting variables. One should note that the plots were implemented in the middle of an extended drought period for the area which continued through important germination and subsequent establishment periods. This could explain at least some of the reasons for the poor success.

TABLE 1: Summary of 1991 vegetation sampling for Wildcat Loadout area. The table shows the total cover and composition for Plot A (near coal pile).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZES
Living Cover	40.63	5.56	16
Litter	9.69	5.01	16
Bareground	48.56	8.07	16
Rock	1.13	0.70	16
COMPOSITION			
Trees & Shrubs	0.00	0.00	16
Forbs	97.36	6.99	16
Grasses	2.64	6.99	16

RECEIVED
JAN 20 1993
DIVISION OF OIL
GAS & MINING

TABLE 2: Summary of 1991 vegetation sampling for Wildcat Loadout area. The table shows the cover and frequency by species for Plot A (near coal pile).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
SHRUBS				
FORBS				
Kochia scoparia	37.19	3.94	16	100.00
Salsola iberica	1.88	4.96	16	18.75
Sphaeralcea grossulariaefolia	0.31	1.21	16	6.25
GRASSES				
Agropyron smithii	0.63	2.42	16	6.25
Stipa comata	0.63	2.42	16	6.25

TABLE 3: Summary of 1991 vegetation sampling for Wildcat Loadout area. The table shows the total cover and composition for Plot B (near substation).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZES
Living Cover	52.50	10.75	16
Litter	7.56	4.03	16
Bareground	39.06	10.34	16
Rock	0.88	0.70	16
COMPOSITION			
Trees & Shrubs	0.00	0.00	16
Forbs	70.04	23.72	16
Grasses	29.96	23.72	16

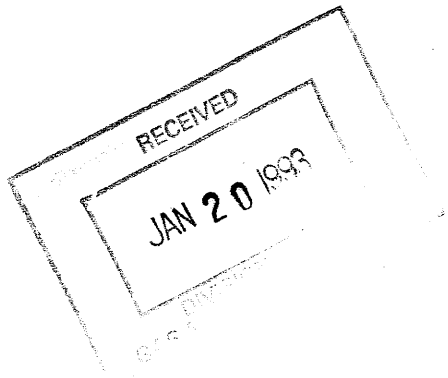


TABLE 4: Summary of 1991 vegetation sampling for Wildcat Loadout area. The table shows the cover and frequency by species for Plot B (near substation).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
SHRUBS				
FORBS				
Kochia scoparia	36.25	12.31	16	100.00
GRASSES				
Agropyron dasystachyum	2.19	3.52	16	31.25
Agropyron smithii	6.69	8.00	16	50.00
Agropyron spicatum	0.31	1.21	16	6.25
Bromus tectorum	0.81	1.74	16	18.75
Oryzopsis hymenoides	6.25	7.18	16	37.50

TABLE 5: Summary of 1991 vegetation sampling for Wildcat Loadout area. The table shows the total cover and composition for Plot C (near rail loadout).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZES
Living Cover	45.75	5.45	16
Litter	11.25	4.84	16
Bareground	27.50	7.29	16
Rock	12.50	6.12	16
COMPOSITION			
Trees & Shrubs	0.57	2.20	16
Forbs	99.43	2.20	16
Grasses	0.00	0.00	16

RECEIVED
JAN 20 1993

TABLE 6: Summary of 1991 vegetation sampling for Wildcat Loadout area. The table shows the cover and frequency by species for Plot C (near rail loadout).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
SHRUBS				
Atriplex canescens	0.31	1.21	16	6.25
FORBS				
Linum lewsii	0.31	1.21	16	6.25
Kochia scoparia	48.13	5.27	16	100.00
GRASSES				

RECEIVED
JAN 20 1993
BUREAU OF LAND MANAGEMENT

TABLE 7: Summary of 1991 vegetation sampling for Wildcat Loadout area. The table shows the total cover and composition for Plot D.

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZES
Living Cover	40.31	7.17	16
Litter	4.38	1.05	16
Bareground	51.13	8.34	16
Rock	4.19	2.13	16
COMPOSITION			
Trees & Shrubs	0.00	0.00	16
Forbs	100.00	0.00	16
Grasses	0.00	0.00	16

RECEIVED
JAN 20 1993
DIVISION OF
OIL, GAS & MINING

TABLE 8: Summary of 1991 vegetation sampling for Wildcat Loadout area. The table shows the cover and frequency by species for Plot D.

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
SHRUBS				
FORBS				
Kochia scoparia	38.75	8.20	16	100.00
Salsola iberica	1.56	2.91	16	25.00
GRASSES				

RECEIVED
JAN 20 1993
DIVISION OF OIL
GAS & MINING PRICE UTAH

TABLE 9: Species planted in the Wildcat Loadout Test Plots.

Scientific Name	Common Name	Lbs/Ac
SHRUBS		
Artemisia tridentata var. *vaseyana*	Big Sagebrush	0.3
Chrysothamnus nauseosus var. *albicaulis*	Whitestem Rabbitbrush	0.5
Ceratoides lanata	Winterfat	3.0
Purshia tridentata	Antelope Bitterbursh	3.0
FORBS		
Linum lewisii	Lewis Flax	.75
Medicago sativa	Alfalfa	1.0
Melilotus officinalis	Yellow Sweetclover	1.0
Penstemon palmeri	Palmer's Penstemon	0.3
Sphaeralcea grossulariaefolia	Gooseberryleaf Globemallow	0.3
GRASSES		
Agropyron smithii	Western Wheatgrass	3.0
Agropyron gracilis	Thickspike Wheatgrass	2.5
Bouteloua gracilis	Blue Grama	.5
Oryzopsis hymenoides	Indian Ricegrass	2.5
Stipa comata	Needle and Threadgrass	2.0
	TOTAL	20.65

RECEIVED
JAN 20 1999

APPENDIX O

COAL PROCESSING WASTE PILE

RECEIVED
OCT 21 1992
DIVISION OF OIL
GAS & MINING PRICE UTAH

May 24, 1989

Mr. John DeMichiei
District Manager
MSHA-Coal Mine Safety and Health
P.O. Box 25367
Denver, Colorado 80225-0367

RE: Wildcat Loadout
I.D. #42-01864
30 CFR, 77.215-2
Refuse Pile Reporting

Dear Mr. DeMichiei,

Enclosed is the information required by 30 CFR, 77.215-2 concerning a refuse pile to be located at Wildcat Loadout. The refuse pile will consist primarily of +4" rock and boney material which is removed from the mine-run coal. This is not the reject product of a washer plant. No impoundment structures will be constructed in conjunction with this reject pile.

If you have any questions concerning this matter or need additional information, I can be contacted at (801) 637-5202.

Sincerely,

Thomas R. May
Safety Director

WILDCAT LOADOUT
MSHA I.D. #42-01864
REFUSE PILE REPORT

As per the requirements of 30 CFR, 77.215-2(b) the following information is submitted:

(1) Operator : Andalex Resources, Inc.

P.O. Box 902
Price, Utah 84501

Refuse Pile Name : Coal Refuse Disposal Site #1

Refuse Pile Number : #1211-UT-09-01864-01

Wildcat Loadout ID # : #42-01864

(2) See enclosed USGS topographic map

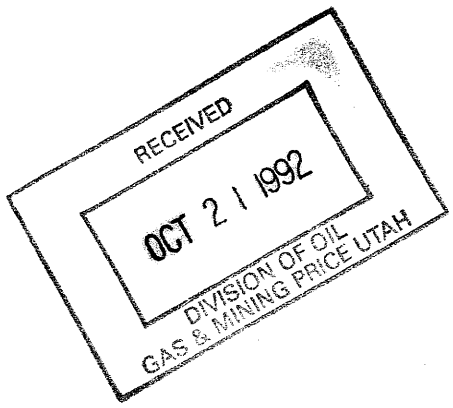
(3) This is a new refuse pile location. No impoundment structures (dams, dikes, etc.) will be constructed in conjunction with the refuse pile. The refuse material will primarily consist of +4" rock and boney material which is removed from the mine-run coal. This material is placed on the ground near the lump coal conveyor belt. When a sufficient amount of the rock and bony material has accumulated it will be transported to the refuse pile by a front-end loader. The reject material will be placed on the pile in lifts which will not exceed 2 feet in thickness. The reject material will accumulate only during the domestic heating seasons when rock and boney is being removed from the lump coal conveyor. The refuse pile will be located on an area which the previous operator used as a coal storage area. The foundation of the refuse area is firm and undisturbed soil. The area is devoid of vegetation. Due to the size and nature of the reject material, compaction is not possible. The refuse pile will not exceed 20 feet in thickness and the slopes will not exceed 2 feet horizontal to 1 foot vertical.

(4) See enclosed Plate #1

(5) The nature and size of the refuse material is such that no spontaneous combustion is anticipated.

(6) No water will be impounded by the refuse pile. All natural drainage is diverted as shown on enclosed Plate 1. The only moisture that will come in contact with the refuse material will be natural precipitation which will pass through the material due to its size and surface location which is gentle sloping terrain.

(7) See the enclosed Plate 2.



U. S. Department of Labor

Mine Safety and Health Administration
P.O. Box 25367
Denver, Colorado 80225--0367
Coal Mine Safety & Health
District 9

JUN -9 1989

Thomas R. May
Safety Director
Andalex Resources, Inc.
P.O. Box 902
Price, UT 84501

Re: Wildcat Loadout
ID No. 42-01864
Coal Refuse Disposal Site No. 1
ID No. 1211-UT-09-01864-01
Refuse Pile Construction Plan

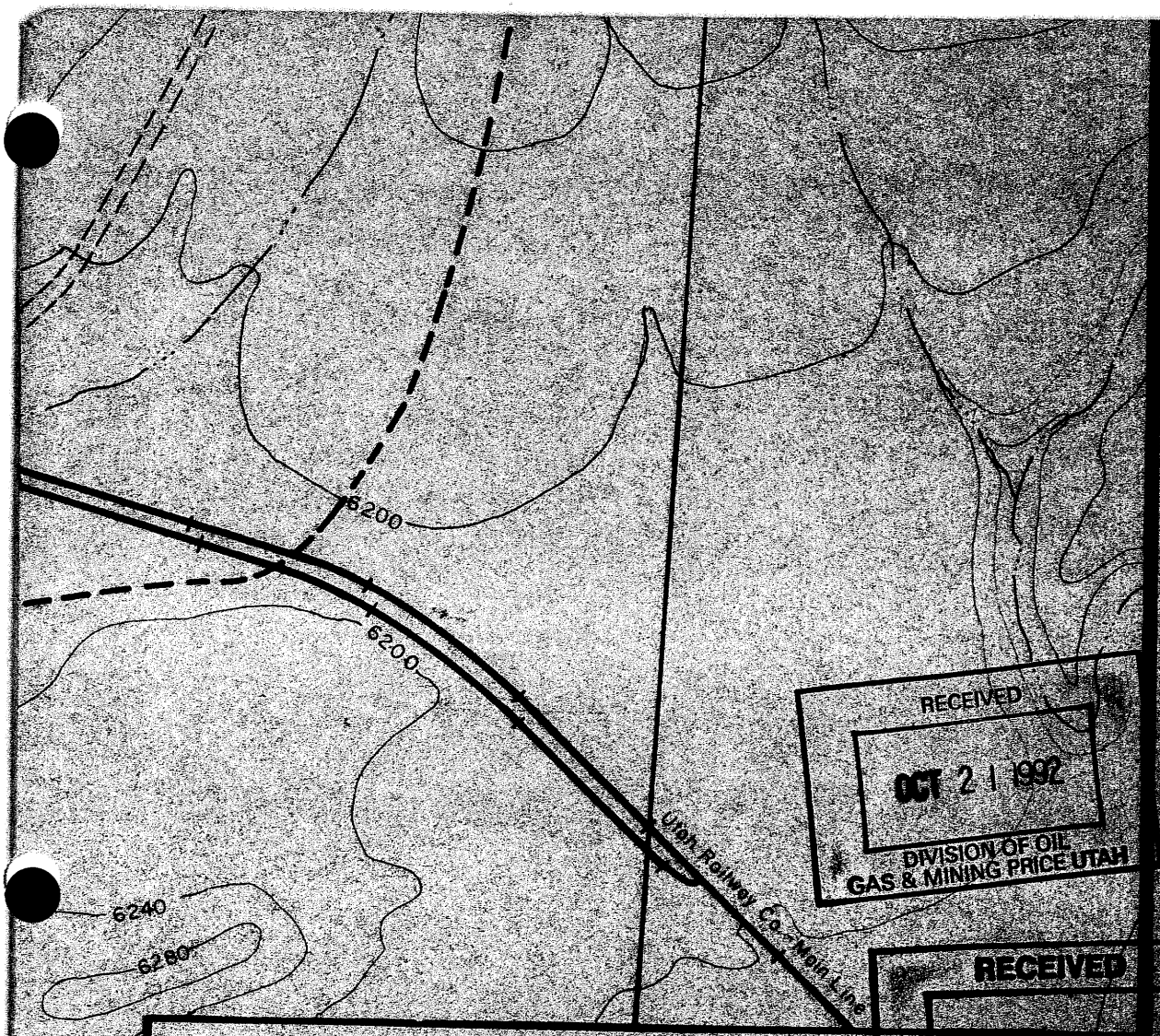
Dear Mr. May:

This is in response to Andalex Resources, Inc.'s, letter dated June 2, 1989, concerning the new refuse pile for the referenced raw coal loadout facility. The proposed location of the new refuse pile is acknowledged. The information, consisting of a cover letter, two pages, two area maps, and cross section drawings, has been made part of the mine file.

Sincerely,

Robert A. Elam

Robert A. Elam
Acting District Manager



RECEIVED
OCT 21 1992
DIVISION OF OIL
GAS & MINING PRICE UTAH

RECEIVED
AUG - 3 1992
DIV. OIL, GAS, MINING

Andalex Resources, Inc
P.O. Box 902
Price, Ut 84501

Wildcat Loadout
Coal Refuse Disposal Site No. 1
Plan

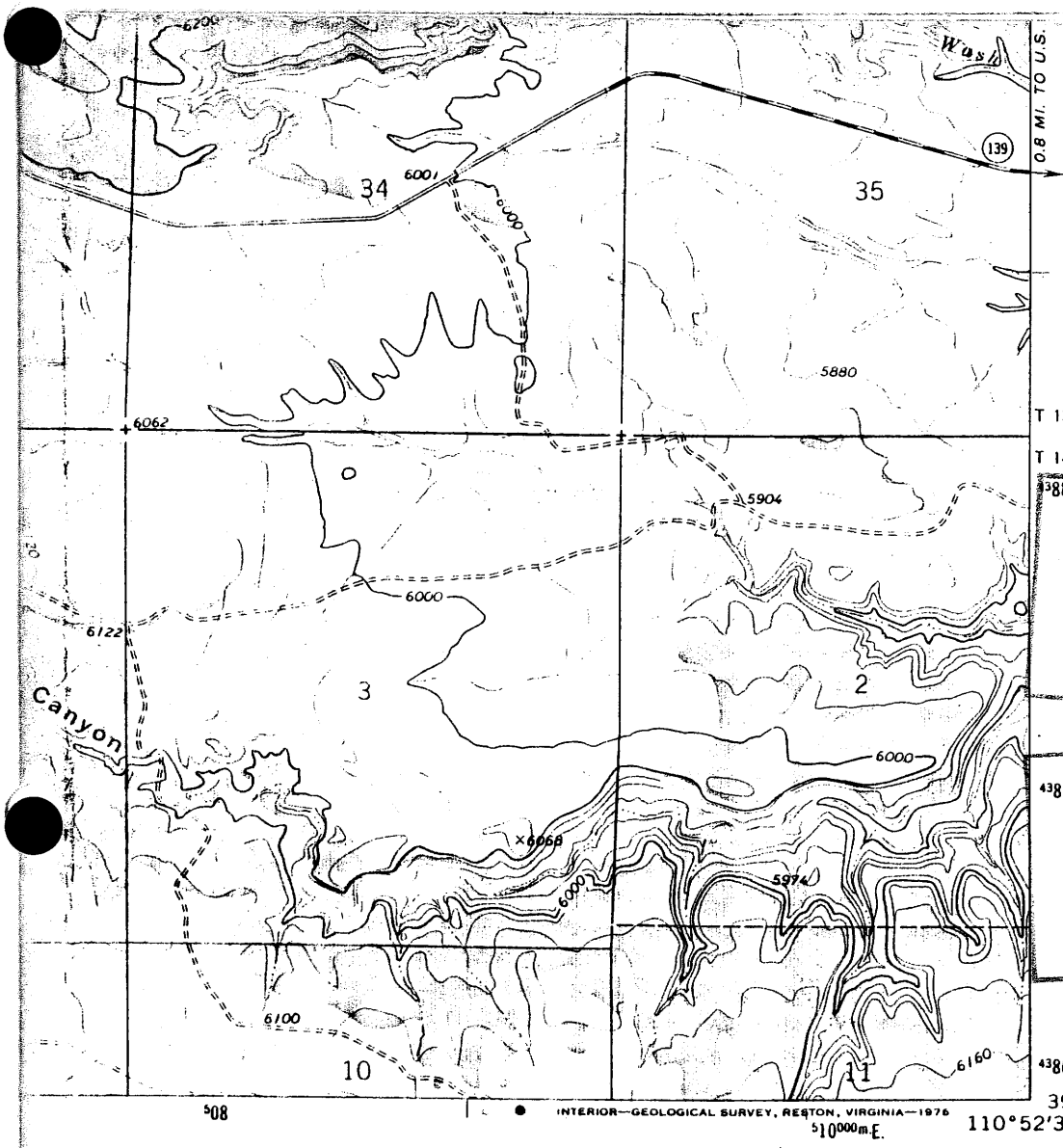
DRAWN BY J.C.B. 5-6-88

APPROVED MWG, DG

SCALE 1"=400'-0"

NO.	DATE	REVISIONS	BY
10	7-22-92	Bonded Area	JP
9	7-11-90	Depression / Permanent Impoundment	JB

Plate 1-Appendix O



RECEIVED
AUG - 3 1992
DIV. OIL, GAS & MINING

RECEIVED
OCT 2 1 1992
DIVISION OF OIL
GAS & MINING PRICE UTAH

ROAD CLASSIFICATION

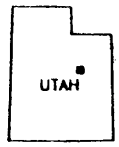
Primary highway, hard surface

Light-duty road, hard or improved surface

Secondary highway, hard surface

Unimproved road

Interstate Route U. S. Route State Route



QUADRANGLE LOCATION

(PRICE) 3863 III SE

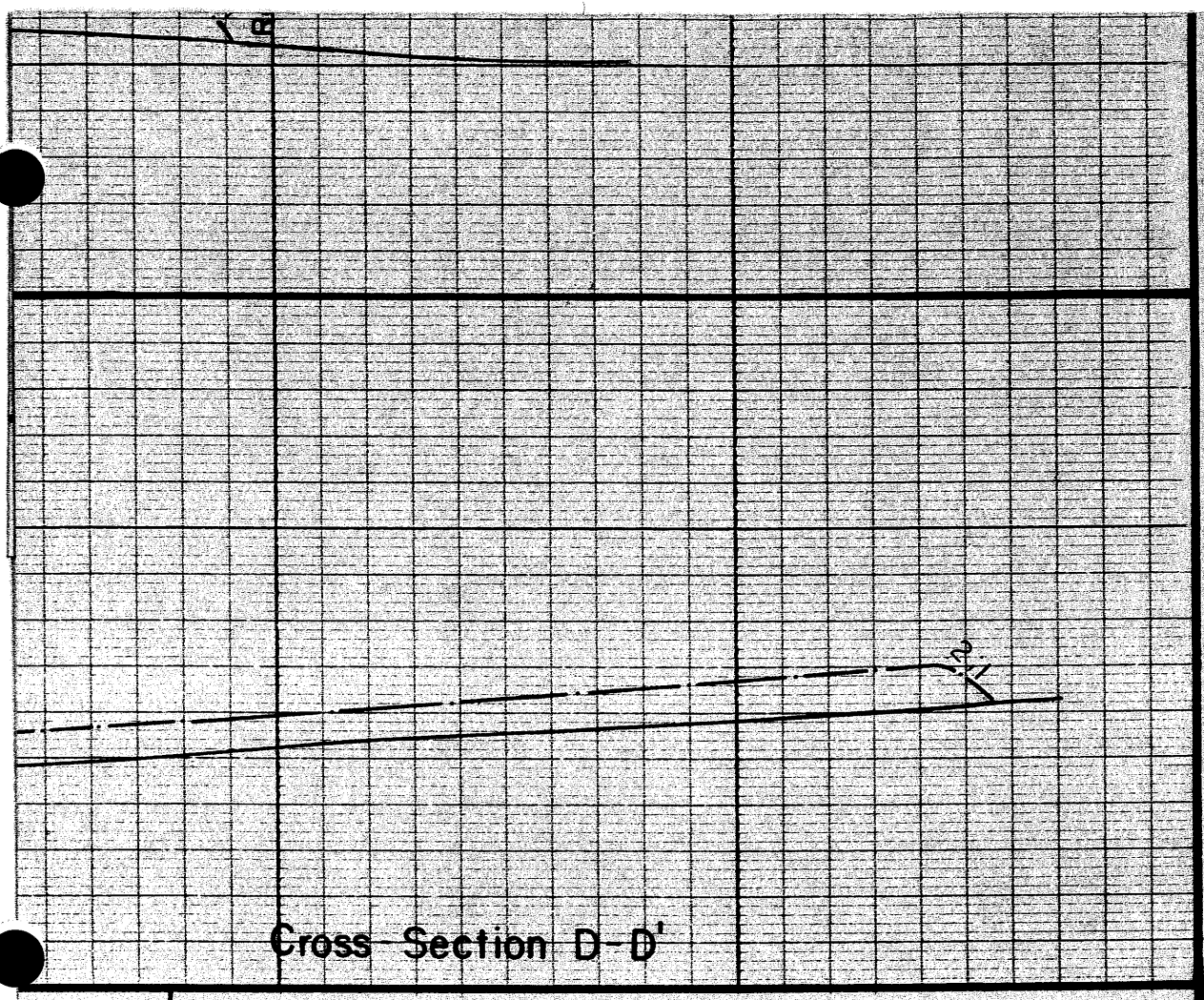
STANDARDVILLE, UTAH

NW/4 CASTLE GATE 15' QUADRANGLE

N3937.5—W11052.5/7.5

1972

AMS 3863 III NW—SERIES V897



Cross Section D-D'

Andalex Resources, Inc
P.O. Box 902
Price, Utah 84501

Wildcat Loadout
Coal Refuse Disposal Site #1
Cross Sections

Drawn by: JB 5-23-89

Scale: Vert. & Horz. : 1" = 100' 0"

No.	Date		By
1	7/14/92		

RECEIVED
OCT 21 1992
DIVISION OF OIL
GAS & MINING PRICE UTAH

Plate 2
Appendix O

APPENDIX O
(SUPPLEMENT)

CHEMICAL ANALYSIS OF REFUSE MATERIAL

Inter-Mountain Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report

West Ridge Resources, Inc.
P.O. Box 1077
Price, Utah 84501

Report ID: S0704107001

Project: Soil and Coal Waste Analysis
Date Received: 4/9/2007

Date: 5/7/2007
Work Order: S0704107

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Organic Matter	Calcium	Magnesium	Sodium	Potassium	Available Potassium
		s.u.	%	dS/m	%	meq/L	meq/L	meq/L	meq/L	meq/100g
S0704107-001	Tan-Topsoil	7.9	46.7	0.32	1.8	1.85	1.08	0.17	0.31	0.39
S0704107-002	Gray - Coal Mine Waste	7.3	42.2	8.55	6.9	28.3	27.7	27.9	1.37	0.50

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report

West Ridge Resources, Inc.

P.O. Box 1077
Price, Utah 84501

Report ID: S0704107001

Project: Soil and Coal Waste Analysis
Date Received: 4/9/2007

Date: 5/7/2007
Work Order: S0704107

Lab ID	Sample ID	Sand	Silt	Clay	Texture	Very Fine Sand	Boron	Nitrogen Nitrate	Phosphorus	Selenium	CO3
		%	%	%		%	ppm	ppm	ppm	ppm	%
S0704107-001	Tan-Topsoil	50.0	36.0	14.0	Loam	45.6		0.84	0.71		8.2
S0704107-002	Gray - Coal Mine Waste	60.0	26.0	14.0	Sandy Loam	23.7	1.55	19.6	3.02	0.09	9.4

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report

West Ridge Resources, Inc.

P.O. Box 1077
Price, Utah 84501

Report ID: S0704107001

Project: Soil and Coal Waste Analysis
Date Received: 4/9/2007

Date: 5/7/2007
Work Order: S0704107

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neut. Pot. t/1000t	T.S. ABP t/1000t
S0704107-001	Tan-Topsoil				
S0704107-002	Gray - Coal Mine Waste	0.39	12.2	116	103

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

THIS APPENDIX HAS BEEN DELETED

APPENDIX R

SEDIMENTATION AND DRAINAGE CONTROL PLAN

APPENDIX R

WILDCAT LOADOUT
SEDIMENTATION AND DRAINAGE CONTROL PLAN

PREPARED BY: DAN W. GUY, P.E.
BLACKHAWK ENGINEERING, INC.
JANUARY 2008

SEDIMENTATION AND DRAINAGE CONTROL PLAN
WILDCAT LOADOUT
TABLE OF CONTENTS

SECTION		PAGE NUMBER
1.	Introduction	1
2.	Design of Drainage Control Structures	3
	Design Parameters	
2.1	Precipitation	4
2.2	Flow	5
2.3	Velocity	6
2.4	Drainage Areas	6
2.5	Slopes, Lengths	6
2.6	Runoff	7
2.7	Runoff Curve Numbers	7
2.8	Culvert Sizing	8
2.9	Culverts	8
2.10	Ditches	9
2.11	Alternate Sediment Control Areas (ASCA)	10
2.12	Erosion Control	11
Table 1	Drainage Area Data	12
Table 2	Runoff Summary	14
Table 3	Drainage Structures	16
Table 4	Drainage Structure Flow Summary	19
Table 5	Ditch Data	23
Table 6	Ditch Design Summary	25
Table 7	Culvert Data	33
Table 8	Culvert Design Summary	35

Figures:

Figure 1	Culvert Nomograph
Figure 2	Rip-Rap Chart
Figure 3	Undisturbed and Disturbed Ditch, Typical Section

SEDIMENTATION AND DRAINAGE CONTROL PLAN
WILDCAT LOADOUT
TABLE OF CONTENTS (Continued)

SECTION		PAGE NUMBER
3.	Design of Sediment Control Structures	39
3.1	Design and Construction Specifications for Sedimentation Pond	40
3.2	Sediment Yield	42
3.3	Sediment Pond Volume	44
Table 9	Sediment Pond "C" Design	45
Table 10	Sediment Pond "E" Design	46
Table 11	Sediment Pond "F" Design	47
Table 12	Sediment Pond "G" Design	48
Table 13	Sediment Pond "H" Design	49
Table 14	Sediment Pond "I" Design	50
Table 15	Permanent Impoundment Design	51
Table 16	Depression Area Design	52
Table 17	Sediment Pond "C" Stage Volume Data (As-Constructed)	53
Table 18	Sediment Pond "E" Stage Volume Data (Proposed)	53
Table 19	Sediment Pond "F" Stage Volume Data (Proposed)	54
Table 20	Sediment Pond "G" Stage Volume Data (Proposed)	54
Table 21	Sediment Pond "H" Stage Volume Data (Proposed)	55
Table 22	Sediment Pond "I" Stage Volume Data (Proposed)	55
Table 23	Permanent Impoundment Stage Volume Data (As-Constructed)	56
Table 24	Depression Area Stage Volume Data (As-Constructed)	56
Table 25	Impoundment Discharge Data	57
Table 26	Sediment Ponds E and F Open-Channel Spillway Stage Discharge Data	58
3.4	Sediment Pond Summary	59

SEDIMENTATION AND DRAINAGE CONTROL PLAN
WILDCAT LOADOUT
TABLE OF CONTENTS (Continued)

SECTION		PAGE NUMBER
4.	Design of Drainage Control Structures for Reclamation Hydrology	60
4.1	General	61
4.2	Reclaimed Area Drainage Control	62
4.3	Restored Channels	63
4.4	Sediment Ponds	63
Table 27	Final Reclamation - Drainage Areas Contributing to Channels	64
Table 28	Final Reclamation - Drainage Structure Flow Summary	65
Table 29	Final Reclamation - Restored Channel Design Parameters	66
Table 30	Final Reclamation - Restored Channel Flow Calculations	67
Figure 4	Restored Channel, Typical Sections	

APPENDICES

Appendix 1 - Computer Backup Data

WILDCAT LOADOUT
SEDIMENTATION AND DRAINAGE CONTROL PLAN

1. Introduction

The Sedimentation and Drainage Control Plan for the Wildcat Loadout has been designed according to the State of Utah R645 - Coal Mining Rules, (revised August 1, 2001). This plan represents the proposed drainage control plan. All design criteria and construction has been certified by a Utah Registered Professional Engineer.

Note: The proposed hydrology plan for the Wildcat Loadout consists of 2 phases - Phase 1 and Phase 2.

Under Phase 1, it is proposed to replace existing Sediment Pond B with new Sediment Pond G-1, as shown on Plates 1A-a and 3D-a. This will increase the drainage area from 2.29 acres presently draining to Pond B to 5.01 acres draining to new Pond G-1. Calculations show the required pond volume for new Pond G-1 under Phase 1 to be 0.669 acre feet, which is far less than the proposed 1.343 acre feet for this pond. The proposed new Pond G-1 is shown on Plate 3D-a and designs are included with this appendix.

Under Phase 2, the disturbed area will be expanded and new sediment ponds and hydrologic controls will be implemented as shown on Plate 1A and as detailed in this Appendix. Pond G-1 will remain in place, but will be expanded as pond G as shown on Plate 3D.

The entire drainage and control plan has been re-evaluated and updated for 2 main reasons:

(1) To evaluate the adequacy and provide up-to-date calculations for existing drainage controls, and;

(2) To provide an overall plan to accommodate the proposed modifications to the site.

The proposed changes to the site plan include the following:

(1) The existing coal storage area will be enlarged;

(2) A 150' wide "drop-zone" for coal dust will be provided downwind of the coal storage pile;

(3) Sediment ponds "A", "B" and "D" will be eliminated and replaced with new sediment ponds "G", "H" and "I" located downgrade from the existing ponds;

(4) Sediment ponds "E" and "F" will be enlarged to ensure adequate capacity for the new drainage system;

(5) A new material storage yard will be added on the west side of the site and drained to the enlarged sediment pond "F";

(6) Existing diversion UD-1 will be converted to a disturbed ditch also draining to enlarged sediment pond "F";

(7) ASCA's 3, 4, 5, 6, and 7 will be eliminated and drained to new or enlarged sediment ponds;

(8) New ASCA's will be established on the outslopes of the new sediment ponds.

(9) The permit area is enlarged to 250 acres.

All existing and proposed structures are shown on updated Plates 1 and 2.

The general surface water control plan for this site consists of the following:

(1) Wherever possible, undisturbed drainage is diverted around the site into natural channels;

(2) The entire disturbed area (except the 5 small ASCA's) and portions of the undisturbed area not diverted, are drained to one of the 6 sediment ponds, permanent impoundment or depression area, via properly sized ditches and culverts;

(3) There are 5 small Alternate Sediment Control Areas (A.S.C.A.). These areas are described in detail under Section 2.11.

(4) **All sediment ponds are sized to contain the runoff from a 10 year - 24 hour precipitation event, plus a minimum of 3 years sediment storage as described in Section 3 of this Appendix. The Permanent Impoundment and Depression Area are sized to contain the runoff from a 100 year - 6 hour precipitation event.**

DESIGN OF DRAINAGE CONTROL STRUCTURES

Design Parameters

2.1 Precipitation
2.2 Flow
2.3 Velocity
2.4 Drainage Area
2.5 Slope Lengths
2.6 Runoff
2.7 Runoff Curve Numbers
2.8 Culvert Sizing
2.9 Culverts
2.10 Ditches
2.11 ASCA Areas
2.12 Erosion Control

Table 1 Drainage Area Data
2 Runoff Summary
3 Drainage Structures
4 Drainage Structure Flow Summary
5 Ditch Data
6 Ditch Design Summary
7 Culvert Data
8 Culvert Design Summary

Figures

Figure 1 Culvert Nomograph
Figure 2 Rip-Rap Chart
Figure 3 Ditch, Typical Section (Unlined Ditch)
Figure 4 Ditch, Typical Section (Lined Ditch)

Design Parameters

2.1 Precipitation

The precipitation-frequency values for the area were taken from "NOAA, Precipitation-Frequency Atlas of the Western U.S., Atlas 2, Volume VI.

Frequency - Duration	Precipitation
2 year - 6 hour	0.85"
10 year - 6 hour	1.23"
10 year - 24 hour	1.85"
25 year - 6 hour	1.48"
25 year - 24 hour	2.15"
100 year - 6 hour	1.91"

Disturbed ditch and culvert designs for runoff control are based on the 10 year - 24 hour event of 1.85" and the 25 year - 6 hour event of 1.48", where required. Undisturbed culvert designs are based on the 10 year - 24 hour event of 1.85".

The sedimentation ponds are designed to contain the runoff from a 10 year - 24 hour event of 1.85" as required by the Division. Reclamation designs are based on the 100 year - 6 hour event of 1.91", where applicable for permanent structures.

ASCA areas are sized to contain or treat runoff from a 10 year - 24 hour precipitation event.

2.2 Flow

Peak flows, flow depths, areas and velocities were calculated using the computer program "Office of Surface Mining Watershed Model", Storm Version 6.20 by Gary E. McIntosh. (Trapezoidal Channel Flow). All flow is based on the SCS - TR55 Method for Type II storms.

Time of concentration of storm events was calculated for each drainage area using the following formula:

$$t_L = \frac{L^{0.8}\,(S+1)^{0.7}}{1900\,Y^{0.5}}$$

where:

t_c	=	Time of Concentration (hrs.)
t_L	=	Lag Time (hrs.) = 0.6 t_c
L	=	Hydraulic Length of Watershed (ft.)
Y	=	Average Land Slope (%)
S	=	$\frac{1000}{CN} - 10$

2.3 Velocity

Flow velocities for each ditch structure were calculated using the Storm computer program with Manning's Formula:

$$V = \frac{1.49}{n} R^{2/3} S^{1/2}$$

where:
- V = Velocity (fps)
- R = Hydraulic Radius (ft.)
- S = Slope (ft. per ft.)
- n = Manning's n; Table 3.1, p.159,

"Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner & Haan, 1983.

Note: The following Manning's n were used in the calculations:

Structure	Manning's n
Culverts (cmp)	0.020
Rip-rapped or Natural Drainage Channels	0.035 - 0.040
Unlined Disturbed Area Ditches	0.035 - 0.040
Bedrock Channels with Rubble	0.030
Concrete Lined Channels	0.015

2.4 Drainage Areas

All drainage areas are disignated with a DA-number (i.e. DA-2) as shown on Plate 2 and 15. All drainage areas were planimetered directly from As-Constructed Plate 2 (Drainage Map) and Plate 15 (Watershed Map).

2.5 Slopes, Lengths

All slopes and hydraulic lengths were measured directly from the topography on Plates 2 and 15.

2.6 Runoff

Runoff was calculated using the SCS Formula for Type II Storm:

$$Q = \frac{(P - 0.2\,S)^2}{P + 0.8\,S}$$

where:

Q	=	Runoff in inches
P	=	Precipitation in inches
S	=	$\frac{1000}{CN} - 10$
CN	=	Runoff Curve Number

2.7 Runoff Curve Numbers

A runoff curve number of 90 was used for all disturbed areas. This is a conservative number based on the SCS determinations for Runoff Curve Numbers for Antecedent Moisture Condition II. A runoff curve number of 65 was used for undisturbed areas. this number is based on the SCS determinations for Runoff Curve Numbers for Antecedent Moisture Condition II, Soil Group B, Range Land in Fair to Good Condition.

The selection of the curve number is also based on field observations and subsequent discussions with DOGM personnel.

The native soil in the area is quite sandy and porous in nature, resulting in a relatively low runoff potential. This was the basis for the selection of SCS Soil Group B.

The runoff numbers were also checked against the chart in Figure 2.26, page 85, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner, and Haan, 1983.

2.8 Culvert Sizing

All culverts were sized using the "Haestad Methods, Flowmaster I, Version 3.43" Computer Program.

Minimum culvert sizing is based on the following Manning's Equation:

$$D = \left(\frac{2.16\ Q\ n}{\sqrt{s}}\right)^{0.35}$$

where:	**D**	**=**	**Required Diameter (ft.)**
	Q	**=**	**QP = Peak Discharge (cfs)**
	n	**=**	**Roughness Factor (0.020 for cmp)**
	S	**=**	**Slope (ft. per ft.)**

Using the above formula, minimum required culvert sizes were calculated for each applicable area. Culverts were then selected above the required minimum, and these sizes were checked for adequacy against the Culvert Nomograph included as Figure 1 of this report.

2.9 Culverts

Culverts have been sized according to the calculations previously described, and are shown on Plate 2, Drainage Control Map.

All culverts are designated with C-number (i.e. C-2) as shown on Plate 2. All culverts are sized to carry the runoff from a 10 year - 24 hour storm, which is well in excess of the 10 year - 6 hour storm required by the regulations. The only exceptions to the above culvert sizing is for culverts used as sediment pond overflows - these culverts are sized to carry the 25 year - 6 hour flows as required for sediment pond designs.

Culverts will be inspected regularly, and cleaned as necessary to provide for passage of design flows. Inlets and outlets shall also be maintained so as to prevent plugging or undue restriction of water flow.

All disturbed area culverts are temporary, and will be removed upon final reclamation.

2.10 Ditches

Ditches are shown on the Minesite Drainage Plan, Plate 2, and are designated with a D-number (i.e., D-2).

All ditches are designed to carry the expected runoff from a 10 year - 24 hour event with a minimum freeboard of 0.5' (See Figures 3 and 4). The 0.5' freeboard represents a minimum of 20% of the flow depth in all disturbed area ditches.

Ditches which exhibit expected flow velocities greater than 5 fps, based on the 10 year - 24 hour runoff, will be lined with rip-rap, belting or ½ round culvert for erosion protection. Typical cross-sections, flow depths and areas for all lined and unlined ditches are shown on Figures 3 and 4 of this report.

Ditch slopes have been determined from Plate 2

All ditches will be inspected regularly, and maintained to the minimum dimensions for the required 10 year - 24 hour runoff to provide adequate capacity for the design flow. All ditches are temporary and will be removed as described under the reclamation hydrology section. (Section 4)

2.11 Alternate Sediment Control Areas (ASCA)

There will be 5 Alternate Sediment Control Areas (ASCA) remaining on this site. The ASCA designations are ASCA-1, ASCA-2, ASCA-8, ASCA-9 and ASCA-10. Previous ASCA's 3, 4, 5, 6 and 7 have been eliminated either by site expansion, or because they are topsoil areas surrounded by berms but still capable of draining to sediment ponds. Only areas not able to be drained to sediment ponds are included as ASCA's.

The following are descriptions of each of the remaining ASCA's and methods of treatment:

ASCA-1 - This is the area west of the railroad right-of-way and scale house access road. The area is approximately 0.84 acres and is treated for sediment control by vegetation. This is an existing ASCA.

ASCA-2 - This is an existing ASCA area on the outslope east of Sediment Pond E. The area is approximately 0.26 acres and is treated by vegetation.

ASCA-8 - This will be a new ASCA located on the outslope of the new Sediment Pond G. It will have an area of approximately 1.16 acres and will be treated by vegetation.

ASCA-9 - This will be a new ASCA located on the outslope of the new Sediment Pond H. It will have an area of approximately 0.18 acres and will be treated by vegetation.

ASCA-10 - This will be a new ASCA located on the outslope of the new Sediment Pond I. It will have an area of approximately 1.18 acres and will be treated by vegetation.

2.12 Erosion Control

Wherever rip-rap is designated to be used, i.e. Culvert Outlets or Unlined Ditches, the following procedure shall be used:

(1) Rip-rap will consist of hard, non-slaking angular, material;

(2) Rip-rap shall meet the following size criteria:

Rip-Rap Sizing	Percent (+ or - 10%)
0.1 D_{50} - 0.5 D_{50}	20
0.5 D_{50} - 1.0 D_{50}	30
1.0 D_{50} - 2.0 D_{50}	50

(3) Rip-rap shall be placed over a filter bedding consisting of -3/4" gravel and placed to a depth of at least the D_{50} of the rip-rap;

(4) Rip-rap depth shall be at least 1.5 times the D_{50} of the material;

(5) Belting, ½ round culvert, concrete lining or grouting of rip-rap may be used in lieu of the above procedures.

TABLE 1
DRAINAGE AREA DATA

Area	Acres	Hydraulic Length	High Elev.	Low Elev.	Change Elev.	Slope %	Runoff CN
DA-1	1.58	250	6198	6184	14	5.60	90
DA-2	1.01	100	6184	6180	4	4.00	90
DA-3	0.80	130	6178	6172	6	4.61	90
DA-4	1.26	230	6176	6170	6	2.61	90
DA-5	1.31	420	6176	6159	17	4.05	90
DA-6	3.09	550	6176	6142	34	6.18	90
DA-7	1.33	400	6164	6142	22	5.50	90
DA-8	3.80	700	6174	6141	33	4.71	90
DA-9	3.57	700	6174	6141	33	4.71	90
DA-10	5.45	400	6141	6124	17	4.25	90
DA-11	3.40	600	6196	6178	18	3.00	90
DA-12	0.42	480	6172	6172	2	0.50	90
DA-13	0.65	300	6174	6160	14	4.67	90
DA-14	0.76	600	6160	6156	4	0.67	90
DA-15	0.34	280	6168	6158	8	2.86	90
DA-16	3.05	640	6160	6138	22	3.44	90
DA-17	3.67	680	6160	6138	22	3.23	90
DA-18	5.04	480	6160	6134	26	5.42	90
DA-19	1.72	370	6188	6178	10	2.70	90
DA-20	2.48	250	6178	6158	20	8.00	90
DA-21	2.46	500	6162	6158	4	0.80	90
DA-22	5.65	730	6158	6129	29	3.97	90
DA-23	1.81	360	6150	6129	21	5.83	90
DA-24	7.48	1150	6178	6130	48	4.17	90
DA-25	1.40	190	6136	6126	10	5.26	90

Area	Acres	Hydraulic Length	High Elev.	Low Elev.	Change Elev.	Slope %	Runoff CN
DA-26	0.71	200	6136	6130	6	3.00	90
DA-27	1.15	440	6140	6130	10	2.27	90
DA-28	5.84	525	6130	6000	30	5.71	* 70
DA-29	1.47	350	6214	6196	18	5.14	90
DA-30	1.35	400	6216	6196	20	5.00	90
DA-31	1.79	1100	6200	6176	24	2.18	90
DA-32	2.23	1100	6200	6176	24	2.18	90
DA-33	6.43	600	6190	6180	10	1.67	90
DA-34	81.54	2900	6460	6200	260	8.97	65
DA-35	3.05	200	6286	6200	86	43.00	65
DA-36	2.18	820	6286	6180	106	12.93	65
DA-37	202.76	5600	6420	6130	290	5.18	65
DA-38	10.21	1150	6360	6235	125	10.87	65
DA-39	7.07	800	6260	6200	60	7.50	90
DA-40	1.76	35	6202	6192	10	28.57	90
ASCA-1	0.84	150	6188	6180	8	5.33	90
ASCA-2	0.26	230	6150	6140	10	4.35	90
ASCA-8	1.16	30	6128	6118	10	33.33	90
ASCA-9	0.18	30	6104	6094	10	33.33	90
ASCA-10	1.18	30	6122	6112	10	33.33	90

*** Weighted**

TABLE 2
RUNOFF SUMMARY

Drainage Area	10 yr - 6 hr 1.23"	10 yr - 24 hr 1.85"		25 yr- 6 hr 1.48"	100 yr - 6 hr 1.91"	Drains To:
	Peak Flow (cfs)	Peak Flow (cfs)	Runoff (ac.ft)	Peak Flow (cfs)	Peak Flow (cfs)	
DA-1	0.59	1.27	0.13	0.82	1.24	Pond E
DA-2	0.30	0.65	0.08	0.42	0.63	Pond E
DA-3	0.25	0.55	0.06	0.35	0.53	Pond E
DA-4	0.51	1.11	0.10	0.71	1.08	Pond E
DA-5	0.57	1.24	0.11	0.80	1.21	Pond E
DA-6	1.35	2.95	0.25	1.89	2.86	Pond E
DA-7	0.56	1.22	0.11	0.78	1.19	Pond E
DA-8	1.67	3.68	0.31	2.34	3.56	Pond I
DA-9	1.57	3.46	0.29	2.20	3.35	Pond I
DA-10	2.35	5.12	0.44	3.28	4.97	Pond I
DA-11	1.94	4.31	0.36	2.73	4.17	Pond C
DA-12	0.15	0.36	0.03	0.22	0.34	Pond C
DA-13	0.26	0.57	0.05	0.36	0.55	Pond C
DA-14	0.27	0.65	0.06	0.39	0.62	Pond C
DA-15	0.14	0.31	0.03	0.20	0.30	Pond C
DA-16	1.32	2.92	0.25	1.85	2.83	Pond C
DA-17	1.55	3.45	0.30	2.18	3.33	Pond C
DA-18	2.19	4.77	0.41	3.06	4.63	Pond C
DA-19	0.75	1.64	0.14	1.05	1.60	Pond G
DA-20	0.88	1.91	0.20	1.23	1.85	Pond G
DA-21	0.92	2.12	0.20	1.31	2.03	Pond G
DA-22	2.41	5.35	0.46	3.39	5.17	Pond G
DA-23	0.74	1.61	0.15	1.03	1.56	Pond G
DA-24	2.79	6.43	0.60	3.98	6.17	Pond G
DA-25	0.49	1.06	0.11	0.68	1.03	Pond G
DA-26	0.27	0.58	0.06	0.38	0.57	Pond H

Drainage Area	10 yr - 6 hr 1.23"	10 yr - 24 hr 1.85"		25 yr- 6 hr 1.48"	100 yr - 6 hr 1.91"	Drains To:
	Peak Flow (cfs)	Peak Flow (cfs)	Runoff (ac.ft)	Peak Flow (cfs)	Peak Flow (cfs)	
DA-27	0.51	1.12	0.09	0.72	1.09	Pond H
DA-28	0.09	0.89	0.09	0.16	0.64	Pond H
DA-29	0.61	1.32	0.12	0.85	1.28	Permanent Imp.
DA-30	0.57	1.25	0.11	0.8	1.21	Pond F
DA-31	0.64	1.52	0.14	0.93	1.45	Pond F
DA-32	0.80	1.90	0.18	1.16	1.81	Pond F
DA-33	2.56	5.81	0.52	3.64	5.59	Depression Area
DA-34	0.37	1.73	0.66	1.21	2.99	Permanent Imp.
DA-35	0.01	0.06	0.02	0.03	0.07	UD-8
DA-36	0.01	0.07	0.02	0.03	0.09	UD-2
DA-37	0.71	3.42	1.64	2.66	6.89	ND-1
DA-38	0.05	0.27	0.08	0.16	0.40	Pond F
DA-39	3.15	6.91	0.57	4.41	6.70	Pond F
DA-40	0.32	0.69	0.14	0.45	0.67	Pond F
ASCA-1	0.27	0.59	0.07	0.38	0.57	
ASCA-2	0.10	0.21	0.02	0.14	0.21	
ASCA-8	0.21	0.44	0.09	0.29	0.43	
ASCA-9	0.03	0.07	0.01	0.04	0.07	
ASCA-10	0.21	0.45	0.10	0.29	0.44	

TABLE 3
DRAINAGE STRUCTURES

Structure	Drainage From:	Remarks:
C-1	DA-36	Flows to UD-2
C-2	C-1	Flows to UD-2
C-3	C-2	Flows to UD-2
UD-2	C-3	Flows to Natural Drainage ND-1
C-4	UD-2	Flows to Natural Drainage ND-1
C-5	DA-37	Flows to Natural Drainage ND-1
C-6	DA-1	Drains to Pond E
D-1	C-6 + DA-2	Drains to Pond E
C-7	D-1	Drains to Pond E
C-8	C-7	Drains to Pond E
D-2	C-8	Drains to Pond E
C-9	D-2	Drains to Pond E
C-10	DA-3	Drains to Pond E
C-11	DA-4	Drains to Pond E
D-3	C-10, C-11	Drains to Pond E
C-13	DA-5	Drains to Pond E
D-4	C-9 + D-3	Drains to Pond E
C-12	D-4	Drains to Pond E
D-5	DA-5	Drains to Pond E
C-13	D-5	Drains to Pond E
D-6	C-12 + C13	Inlet to Pond E
D-7	DA-7	Inlet to Pond E
C-14	Pond E	Principle Outlet from Pond E
C-15	DA-29, DA-34, DA-35	Permanent Impoundment Principle Spillway
C-16	DA-29, DA-34, DA-35	Permanent Impoundment Emergency Spillway
D-8	DA-8	Drains to New Pond I
D-9	DA-9	Drains to New Pond I
C-17	DA-8 + DA-9	Drains to New Pond I
D-10	C-17 + DA-10	Inlet to Pond I

Structure	Drainage From:	Remarks:
C-18	DA-11	Flows to Pond C
D-11	C-18	Flows to Pond C
D-12	DA-12	Flows to Pond C
C-19	D-12	Flows to Pond C
D-13	C-19 + DA-13	Flows to Pond C
C-20	D-11 + D-13	Flows to Pond C
C-21	DA-14	Flows to Pond C
D-14	C-21	Flows to Pond C
C-22	D-14	Flows to Pond C
C-23	C-20 + C-22	Flows to Pond C
D-15	DA-15	Flows to Pond C
C-24	C-23 + D-15	Inlet to Pond C
C-25	DA-16	Flows to Pond C
D-16	C-25	Flows to Pond C
C-26	DA-17	Flows to Pond C
D-17	C-26	Flows to Pond C
C-27	D-16 + D-17	Flows to Pond C
C-28	DA-18	Flows to Pond C
D-18	C-28	Flows to Pond C
D-19	C-27 + D-18	Inlet to Pond C
C-29	Pond C	Principle Spillway Pond C
C-30	Pond C	Emergency Spillway Pond C
C-31	DA-19	Flows to New Pond G
D-20	½ DA-20	Flows to New Pond G
C-32	C-31 + D-20	Flows to New Pond G
D-21	C-32	Flows to New Pond G
D-22	½ DA-20	Flows to New Pond G
C-33	D-22	Flows to New Pond G
D-23	D-21 + C-33	Flows to New Pond G
C-34	D-22 + DA-21	Flows to New Pond G
D-24	1/4 DA-24	Flows to New Pond G

Structure	Drainage From:	Remarks:
C-35	D-24	Flows to New Pond G
D-25	DA-24	Inlet to New Pond G
D-26	C-34 + DA-22	Inlet to New Pond G
C-36	DA-23	Flows to New Pond G
D-27	C-36 + DA-25	Inlet to New Pond G
D-28	DA-26	Flows to New Pond H
C-37	DA-27	Flows to New Pond H
D-29	C-37	Flows to New Pond H
D-30	D-28 + D-29 + DA-28	Inlet to New Pond H
D-31	DA-29	Flows to Permanent Impoundment
D-32	DA-30	Flows to Pond F
D-33	DA-31	Flows to Pond F
C-40	D-36	Flows to Pond F
D-36	2/3 DA-38	Flows to Pond F
D-37	1/3 DA-38	Flows to Pond F
D-38	D-36 + D-37	Flows to Pond F
D-39	DA-39	Flows to Pond F
D-40	D-38 + D-39	Inlet to Pond F
D-34	D-32 + D-33	Inlet to Pond F
D-35	DA-32	Inlet to Pond F
C-38	Pond F	Principle Spillway from Pond F
C-39	D-3	Flows to Permanent Impoundment
UD-8	DA-35	Flows to Permanent Impoundment
Permanent Impoundment	DA-34 + UD-8	Flows to Depression Area
Depression Area	DA-33 + Permanent Impoundment	No Outlet

TABLE 4
DRAINAGE STRUCTURE FLOW SUMMARY

Area	10/6 cfs	10/24 cfs	25/6 cfs	100/6 cfs	Flows to:
D-1	0.89	1.92	1.24	1.87	Pond E
D-2	0.89	1.92	1.24	1.87	Pond E
D-3	0.76	1.66	1.06	1.61	Pond E
D-4	1.65	3.58	2.30	3.48	Pond E
D-5	0.57	1.24	0.80	1.21	Pond E
D-6	2.22	4.72	3.10	4.69	Inlet to Pond E
D-7	0.56	1.22	0.78	1.19	Inlet to Pond E
D-8	1.67	3.68	2.34	3.56	Pond I
D-9	1.57	3.46	2.20	3.35	Pond I
D-10	5.59	12.26	7.82	11.88	Inlet to Pond I
D-11	1.94	4.31	2.73	4.17	Pond C
D-12	0.15	0.36	0.22	0.34	Pond C
D-13	0.41	0.93	0.58	0.89	Pond C
D-14	0.27	0.65	0.39	0.62	Pond C
D-15	0.14	0.31	0.20	0.30	Pond C
D-16	1.32	2.92	1.85	2.83	Pond C
D-17	1.55	3.45	2.18	3.33	Pond C
D-18	2.19	4.77	3.06	4.63	Pond C
D-19	5.06	11.14	7.09	10.79	Inlet to Pond C
D-20	0.44	0.96	0.62	0.93	Pond G
D-21	1.19	2.60	1.85	2.78	Pond G
D-22	0.44	0.96	0.62	0.93	Pond G
D-23	2.63	3.56	2.47	3.71	Pond G
D-24	0.70	1.61	1.00	1.54	Pond G
D-25	2.79	6.43	3.98	6.17	Pond G
D-26	3.77	8.43	5.32	8.13	Inlet to Pond G
D-27	1.23	2.67	1.71	2.59	Inlet to Pond G
D-28	0.27	0.58	0.38	0.57	Pond H
D-29	0.51	1.12	0.72	1.09	Pond H

Area	10/6 cfs	10/24 cfs	25/6 cfs	100/6 cfs	Flows to:
D-30	0.87	2.59	1.26	2.30	Inlet to Pond H
D-31	0.61	1.37	0.85	1.28	To Permanent Impoundment
D-32	0.57	1.25	0.80	1.21	To Pond F
D-33	0.64	1.52	0.93	1.45	To Pond F
D-34	1.21	2.77	1.73	2.66	Inlet to Pond F
D-35	0.80	1.90	1.16	1.81	Inlet to Pond F
D-36	0.03	0.18	0.11	0.27	To Pond F
D-37	0.02	0.09	0.05	0.13	To Pond F
D-38	0.05	0.27	0.16	0.40	To Pond F
D-39	3.15	6.91	4.41	6.70	To Pond F
D-40	3.20	7.18	4.57	7.10	Inlet to Pond F
C-1	0.01	0.07	0.03	0.09	ND-1
C-2	0.01	0.07	0.03	0.09	ND-1
C-3	0.01	0.07	0.03	0.09	ND-1
C-4	0.01	0.07	0.03	0.09	ND-1
C-5	0.71	3.42	2.66	6.89	ND-1
C-6	0.59	1.27	0.82	1.24	Pond E
C-7	0.89	1.92	1.24	1.87	Pond E
C-8	0.89	1.92	1.24	1.87	Pond E
C-9	0.89	1.92	1.24	1.87	Pond E
C-10	0.25	0.55	0.35	0.53	Pond E
C-11	0.51	1.11	0.71	1.08	Pond E
C-12	1.65	3.58	2.30	3.48	Pond E
C-13	0.57	1.24	0.80	1.21	Pond E
C-14	2.78	5.94	3.88	5.88	Principle Spillway Outlet Pond E
C-15	0.99	3.11	2.09	4.34	Depression Area
C-16	0.99	3.11	2.09	4.34	Depression Area
C-17	3.24	7.14	4.54	7.91	Pond I
C-18	1.94	4.31	2.73	4.17	Pond C
C-19	0.15	0.36	0.22	0.34	Pond C

Area	10/6 cfs	10/24 cfs	25/6 cfs	100/6 cfs	Flows to:
C-20	2.35	5.24	3.31	5.06	Pond C
C-21	0.27	0.65	0.39	0.62	Pond C
C-22	0.27	0.65	0.39	0.62	Pond C
C-23	2.62	5.89	3.70	5.68	Pond C
C-24	2.76	6.20	4.00	5.98	Inlet to Pond C
C-25	1.32	2.92	1.85	2.83	Pond C
C-26	1.55	3.45	2.18	3.33	Pond C
C-27	2.87	6.37	4.03	6.16	Pond C
C-28	2.19	4.77	3.06	4.63	Pond C
C-29	7.82	17.34	11.09	16.77	Principle Spillway Outlet, Inlet to Pond C
C-30	7.82	17.34	11.09	16.77	Emergency Spillway Outlet, Inlet to Pond C
C-31	0.75	1.64	1.05	1.60	Pond G
C-32	1.19	2.60	1.67	2.53	Pond G
C-33	0.44	0.96	0.62	0.93	Pond G
C-34	1.36	3.08	1.93	2.96	Pond G
C-35	0.70	1.61	1.00	1.54	Pond G
C-36	0.74	1.61	1.03	1.56	Pond G
C-37	0.51	1.12	0.72	1.09	Pond H
C-38	5.21	11.85	7.46	11.57	Principle Spillway Outlet, Pond F
C-39	0.61	1.37	0.85	1.28	Permanent Impoundement
C-40	0.03	0.18	0.11	0.27	Pond F
UD-8	0.01	0.06	0.03	0.07	Permanent Impoundment
Permanent Impoundment	0.37	1.73	1.21	2.99	Permanent Impoundment
Depression Area	2.56	5.81	3.64	5.59	Depression Area
UD-2	0.01	0.07	0.03	0.09	ND-1
ASCA-1	0.27	0.59	0.38	0.57	ND-1

Area	10/6 cfs	10/24 cfs	25/6 cfs	100/6 cfs	Flows to:
ASCA-2	0.10	0.21	0.14	0.21	ND-1
ASCA-8	0.21	0.44	0.29	0.43	Berm/Pond G
ASCA-9	0.03	0.07	0.04	0.07	Berm/Pond H
ASCA-10	0.21	0.45	0.29	0.44	Berm/Pond I
ND-1	0.71	3.42	2.66	6.89	-

TABLE 5
DITCH DATA

Area ID	Hydraulic Length	High Elevation	Low Elevation	Change Elevation	Slope %	Manning's No.
D-1	50	6180	6178	2	4.0	0.035
D-2	150	6166	6164	2	1.3	0.035
D-3	595	6170	6162	8	1.3	0.035
D-4	90	6162	6160	2	2.2	0.035
D-5	170	6164	6158	6	3.5	0.035
D-6	150	6156	6144	12	8.0	0.035
D-7	150	6154	6144	10	6.7	0.035
D-8	540	6160	6142	18	3.3	0.035
D-9	580	6168	6142	26	4.5	0.035
D-10	430	6138	6126	12	2.8	0.035
D-11	620	6162	6156	6	1.0	0.035
D-12	460	6176	6172	4	0.9	0.035
D-13	150	6162	6158	4	2.7	0.035
D-14	410	6162	6158	4	1.0	0.035
D-15	190	6162	6156	6	3.2	0.035
D-16	170	6141	6138	3	1.8	0.035
D-17	90	6140	6138	2	2.2	0.035
D-18	130	6140	6136	4	3.1	0.035
D-19	95	6136	6128	8	8.4	0.035
D-20	470	6176	6166	10	2.1	0.035
D-21	120	6162	6160	2	1.7	0.035
D-22	220	6163	6160	3	1.4	0.035
D-23	260	6160	6157	3	1.2	0.035
D-24	130	6178	6176	2	1.5	0.035
D-25	1060	6152	6128	26	2.5	0.035

Area ID	Hydraulic Length	High Elevation	Low Elevation	Change Elevation	Slope %	Manning's No.
D-26	835	6158	6129	29	3.5	0.035
D-27	160	6136	6129	7	4.4	0.035
D-28	200	6136	6130	6	3.0	0.035
D-29	260	6138	6130	8	3.1	0.035
D-30	470	6130	6106	24	5.1	0.035
D-31	300	6211	6206	5	1.7	0.035
D-32	470	6211	6196	15	3.2	0.035
D-33	580	6102	6196	6	1.0	0.035
D-34	580	6196	6170	26	4.5	0.035
D-35	350	6181	6170	11	3.1	0.030
D-36	675	6228	6216	12	1.8	0.035
D-37	870	6280	6216	64	7.4	0.035
D-38	810	6216	6190	26	3.2	0.035
D-39	1050	6240	6190	50	4.8	0.035
D-40	180	6190	6180	10	5.6	0.035

TABLE 6
DITCH DESIGN SUMMARY

Ditch Structure	D-1	D-2	D-3	D-4	D-5
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	0.89	0.89	0.76	1.65	0.57
Velocity (fps)	2.72	1.79	1.72	2.54	2.32
Required Area (ft^2)	0.33	0.50	0.44	0.65	0.25
Flow Depth (ft.)	0.40	0.50	0.47	0.57	0.35
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	1.92	1.92	1.66	3.58	1.24
Velocity (fps)	3.30	2.17	2.09	3.08	2.81
Required Area (ft^2)	0.58	0.89	0.80	1.16	0.44
Flow Depth (ft.)	0.54	0.67	0.63	0.76	0.47
Construction					
Minimum Area (ft^2)	2.16	2.74	2.55	3.18	1.88
Minimum Depth (ft.)	1.04	1.17	1.13	1.26	0.97
*Erosion Protection	N	N	N	N	N
Type	-	-	-	-	-

* Based on 10 year - 24 hour flow.

TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-6	D-7	D-8	D-9	D-10
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	2.22	0.56	1.67	1.57	5.59
Velocity (fps)	4.44	2.94	2.96	3.28	3.77
Required Area (ft^2)	0.50	0.19	0.56	0.48	1.48
Flow Depth (ft.)	0.50	0.31	0.53	0.49	0.86
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	4.72	1.22	3.68	3.46	12.26
Velocity (fps)	5.36	3.57	3.61	4.00	4.59
Required Area (ft^2)	0.88	0.34	1.02	0.87	2.67
Flow Depth (ft.)	0.66	0.41	0.71	0.66	1.16
Construction					
Minimum Area (ft^2)	2.69	1.66	2.93	2.69	5.51
Minimum Depth (ft.)	1.16	0.91	1.21	1.16	1.66
*Erosion Protection	Y	N	N	N	N
Type	½ Round Culvert	-	-	-	-

* Based on 10 year - 24 hour flow.

TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-11	D-12	D-13	D-14	D-15
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	1.94	0.15	0.41	0.27	0.14
Velocity (fps)	1.97	1.00	1.94	1.20	1.58
Required Area (ft^2)	0.99	0.15	0.21	0.22	0.09
Flow Depth (ft.)	0.70	0.27	0.33	0.34	0.21
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	4.31	0.36	0.93	0.65	0.31
Velocity (fps)	2.40	1.24	2.38	1.50	1.50
1.92Required Area (ft^2)	1.79	0.29	0.39	0.43	0.16
Flow Depth (ft.)	0.95	0.38	0.44	0.47	0.28
Construction					
Minimum Area (ft^2)	4.20	1.55	1.77	1.88	1.22
Minimum Depth (ft.)	1.45	0.88	0.94	0.97	0.78
*Erosion Protection	N	N	N	N	N
Type	-	-	-	-	-

* Based on 10 year - 24 hour flow.

TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-16	D-17	D-18	D-19	D-20
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	1.32	1.55	2.19	5.06	0.44
Velocity (fps)	2.23	2.50	3.10	5.55	1.79
Required Area (ft^2)	0.59	0.62	0.71	0.91	0.25
Flow Depth (ft.)	0.54	0.56	0.59	0.68	0.35
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	2.92	3.45	4.77	11.14	0.96
Velocity (fps)	2.72	3.05	3.76	6.76	2.18
Required Area (ft^2)	1.07	1.13	1.27	1.65	0.44
Flow Depth (ft.)	0.73	0.75	0.80	0.91	0.47
Construction					
Minimum Area (ft^2)	3.03	3.13	3.38	3.98	1.51
Minimum Depth (ft.)	1.23	1.25	1.30	1.41	0.87
*Erosion Protection	N	N	N	Y	N
Type	-	-	-	½ Round Culvert Belt	-

* Based on 10 year - 24 hour flow.

TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-21	D-22	D-23	D-24	D-25
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	1.19	0.44	2.63	0.70	2.79
Velocity (fps)	2.12	1.54	2.27	1.77	3.04
Required Area (ft^2)	0.56	0.29	1.16	0.39	0.92
Flow Depth (ft.)	0.53	0.38	0.76	0.44	0.68
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	2.60	0.96	3.56	1.61	6.43
Velocity (fps)	2.58	1.87	2.45	2.18	3.74
Required Area (ft^2)	1.01	0.51	1.45	0.74	1.72
Flow Depth (ft.)	0.71	0.51	0.85	0.61	0.93
Construction					
Minimum Area (ft^2)	2.93	2.04	3.65	2.46	4.09
Minimum Depth (ft.)	1.21	1.01	1.35	1.11	1.43
*Erosion Protection	N	N	N	N	N
Type	-	-	-	-	-

* Based on 10 year - 24 hour flow.

TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-26	D-27	D-28	D-29	D-30
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	3.77	1.23	0.27	0.51	0.87
Velocity (fps)	3.72	3.06	1.81	2.15	2.97
Required Area (ft^2)	0.01	0.40	0.15	0.24	0.29
Flow Depth (ft.)	0.71	0.45	0.27	0.34	0.38
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	8.43	2.67	0.58	1.12	2.59
Velocity (fps)	4.54	3.71	2.20	2.62	3.89
Required Area (ft^2)	1.86	0.72	0.26	0.43	0.66
Flow Depth (ft.)	0.96	0.60	0.36	0.46	0.58
Construction					
Minimum Area (ft^2)	4.26	2.42	1.48	1.84	2.33
Minimum Depth (ft.)	1.46	1.10	0.86	0.96	1.08
*Erosion Protection	N	N	N	N	N
Type	-	-	-	-	-

* Based on 10 year - 24 hour flow.

TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-31	D-32	D-33	D-34	D-35
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	0.61	0.57	0.64	1.21	0.80
Velocity (fps)	1.80	2.24	1.49	3.07	2.41
Required Area (ft^2)	0.34	0.25	0.43	0.39	0.33
Flow Depth (ft.)	0.41	0.36	0.46	0.44	0.41
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	1.32	1.25	1.52	2.77	1.90
Velocity (fps)	2.18	2.73	1.85	3.78	2.99
Required Area (ft^2)	0.61	0.46	0.82	0.73	0.64
Flow Depth (ft.)	0.55	0.48	0.64	0.61	0.56
Construction					
Minimum Area (ft^2)	2.21	1.92	2.60	2.46	2.69
Minimum Depth (ft.)	1.05	0.98	1.14	1.11	1.16
*Erosion Protection	N	N	N	N	N
Type	-	-	-	-	-

* Based on 10 year - 24 hour flow.

TABLE 6 (Continued)
DITCH DESIGN SUMMARY

Ditch Structure	D-36	D-37	D-38	D-39	D-40
10 yr - 6 hr event (in.)	1.23	1.23	1.23	1.23	1.23
Peak Flow (cfs)	0.03	0.02	0.05	3.15	3.20
Velocity (fps)	0.86	1.33	1.22	4.00	4.25
Required Area (ft^2)	0.03	0.02	0.04	0.79	0.75
Flow Depth (ft.)	0.13	0.09	0.14	0.63	0.61
10 yr - 24 hr event (in.)	1.85	1.85	1.85	1.85	1.85
Peak Flow (cfs)	0.18	0.09	0.27	6.91	7.18
Velocity (fps)	1.35	1.93	1.86	4.87	5.21
Required Area (ft^2)	0.13	0.05	0.15	1.42	1.38
Flow Depth (ft.)	0.26	0.15	0.27	0.84	0.83
Construction					
Minimum Area (ft^2)	1.16	0.85	1.19	3.59	3.54
Minimum Depth (ft.)	0.76	0.65	0.77	1.34	1.33
*Erosion Protection	N	N	N	N	Y
Type	-	-	-	-	½ Round Culvert

* Based on 10 year - 24 hour flow.

TABLE 7
CULVERT DATA

Culvert ID	Length	Slope %	Manning's No.
C-1	30	3.0	0.020
C-2	40	5.0	0.020
C-3	70	2.9	0.020
C-4	50	8.0	0.020
C-5	120	3.3	0.020
C-6	40	7.5	0.020
C-7	70	2.9	0.020
C-8	60	3.3	0.020
C-9	80	2.5	0.020
C-10	20	3.0	0.020
C-11	20	3.0	0.020
C-12	40	3.3	0.020
C-13	80	3.8	0.020
C-14	40	10.0	0.020
C-15	40	3.0	0.020
C-16	40	3.0	0.020
C-17	80	5.0	0.020
C-18	90	3.0	0.020
C-19	40	15.0	0.020
C-20	40	3.3	0.020
C-21	100	1.0	0.020
C-22	90	2.0	0.020
C-23	50	4.0	0.020
C-24	400	6.0	0.020
C-25	30	13.3	0.020
C-26	40	7.5	0.020

Culvert ID	Length	Slope %	Manning's No.
C-27	50	3.0	0.020
C-28	50	8.0	0.020
C-29	60	3.0	0.020
C-30	60	3.0	0.020
C-31	90	3.0	0.020
C-32	20	3.0	0.020
C-33	30	3.5	0.020
C-34	130	3.8	0.020
C-35	45	20.0	0.020
C-36	30	3.0	0.020
C-37	30	8.0	0.020
C-38	40	3.3	0.020
C-39	40	3.0	0.020
C-40	40	2.5	0.020

TABLE 8

CULVERT DESIGN SUMMARY

Culvert	10 yr - 6 hr Event 1.23"			10 yr - 24 hr Event 1.85"			Actual Construction Diameter (ft.)	Flow Capacity (cfs)	Erosion Protection at Outlet Required Y/N	Type of Erosion Protection
	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.				
C-1	0.01	1.14	0.11	0.07	1.86	0.22	1.0	4.01	N	-
C-2	0.01	1.38	0.10	0.07	2.25	0.20	1.0	5.18	N	-
C-3	0.01	1.13	0.11	0.07	1.83	0.22	2.0	25.04	N	-
C-4	0.01	1.65	0.09	0.07	2.68	0.18	2.0	41.59	N	-
C-5	0.71	3.43	0.51	3.42	5.09	0.93	3.0	78.76	Y	Natural
C-6	0.59	4.46	0.41	1.27	5.40	0.55	1.25	11.50	Y	6" D^{50} Rip-Rap
C-7	0.89	3.46	0.57	1.92	4.19	0.76	1.25	25.04	N	1.20
C-8	0.89	3.63	0.56	1.92	4.40	0.75	2.0	26.71	N	0.75
C-9	0.89	3.27	0.59	1.92	3.97	0.78	1.5	10.80	N	1.00
C-10	0.25	2.55	0.35	0.55	3.11	0.47	1.0	4.01	N	1.00
C-11	0.51	3.05	0.46	1.11	3.70	0.62	1.0	4.01	N	0.50
C-12	1.65	4.24	0.70	3.58	5.14	0.94	1.5	11.83	Y	½ Round Culvert
C-13	0.57	3.43	0.46	1.24	4.16	0.62	1.0	4.51	N	0.50
C-14	2.78	7.32	0.70	5.94	8.85	0.92	1.5	21.59	Y	9" D^{50} Rip-Rap
C-15	0.37	2.81	0.41	1.73	4.14	0.73	1.5	11.83	N	-
C-16	0.37	2.81	0.41	1.73	4.14	0.73	1.5	11.83	N	-
C-17	3.24	5.86	0.84	7.14	7.14	1.13	*2.0	32.88	Y	9" D^{50} Rip-Rap or Belting

Culvert	10 yr - 6 hr Event 1.23"			10 yr - 24 hr Event 1.85"			Actual Construction Diameter (ft.)	Flow Capacity (cfs)	Erosion Protection at Outlet Required Y/N	Type of Erosion Protection
	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.				
C-18	1.94	4.26	0.76	4.31	5.20	1.03	1.25	7.27	Y	6" D^{50} Rip-Rap
C-19	0.15	4.11	0.22	0.36	5.11	0.30	2.0	56.95	Y	6" D^{50} Rip-Rap
C-20	2.35	4.63	0.80	5.24	5.66	1.09	2.0	26.71	Y	Drop Inlet
C-21	0.27	1.72	0.45	0.65	2.15	0.62	1.0	2.32	N	-
C-22	0.27	2.23	0.39	0.65	2.78	0.55	1.0	3.28	N	-
C-23	2.62	5.11	0.81	5.89	6.26	1.09	2.0	29.41	Y	Drop Inlet
C-24	2.76	6.03	0.76	6.20	7.38	1.03	2.0	36.02	Y	Belting Pond Inlet
C-25	1.32	6.76	0.50	2.92	8.25	0.67	1.0	8.45	Y	6" D^{50} Rip-Rap
C-26	1.55	5.68	0.59	3.45	6.93	0.80	1.0	6.34	Y	6" D^{50} Rip-Rap
C-27	2.87	4.70	0.88	6.37	5.73	1.19	1.5	11.83	Y	½ Round Culvert
C-28	2.19	6.34	0.66	4.77	7.70	0.89	1.0	6.55	Y	6" D^{50} Rip-Rap
C-29	7.82	6.03	1.28	17.34	7.36	1.73	1.5	11.83	Y	9" D^{50} Rip-Rap
C-30	7.82	6.03	1.28	17.34	7.36	1.73	1.5	11.83	Y	9" D^{50} Rip-Rap
C-31	0.75	3.36	0.53	1.64	4.08	0.72	1.25	7.27	N	-
C-32	1.19	3.77	0.63	2.60	4.58	0.85	1.0	4.01	N	-
C-33	0.44	3.11	0.42	0.96	3.78	0.57	1.0	4.33	N	-
C-34	1.36	4.26	0.64	3.08	5.22	0.87	1.25	8.19	Y	Belting
C-35	0.70	6.72	0.36	1.61	8.28	0.50	1.0	10.36	Y	6" D^{50} Rip-Rap
C-36	0.74	3.35	0.53	1.61	4.07	0.71	1.0	4.01	N	-

Culvert	10 yr - 6 hr Event 1.23"			10 yr - 24 hr Event 1.85"			Actual Construction Diameter (ft.)	Flow Capacity (cfs)	Erosion Protection at Outlet Required Y/N	Type of Erosion Protection
	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.	Peak Flow Cfs	Velocity fps	Min. Diam. Req'd ft.				
C-37	0.51	4.41	0.38	1.12	5.36	0.52	*1.0	6.55	Y	6" D^{50} Rip-Rap
C-38	5.21	5.65	1.08	11.85	6.94	1.47	*1.5	12.40	Y	Belting
C-39	0.61	3.19	0.49	1.37	3.90	0.67	*1.25	25.47	N	-
C-40	0.03	1.40	0.17	0.18	2.20	0.32	*2.0	23.25	N	-

* Proposed

FIGURES

Figure 1 **Culvert Nomograph**

Figure 2 **Rip-Rap Chart**

Figure 3 **Undisturbed and Disturbed Ditch, Typical Section**

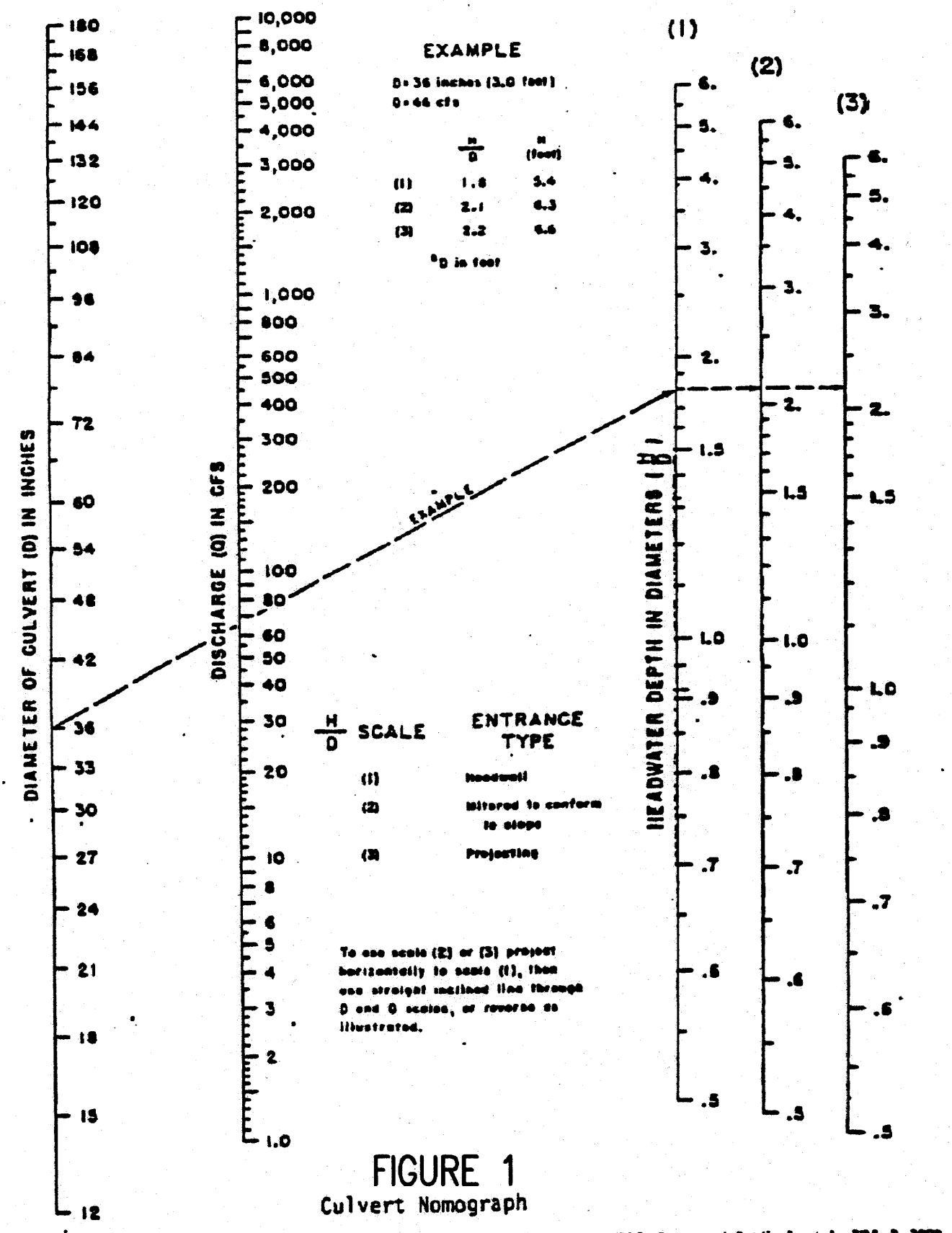
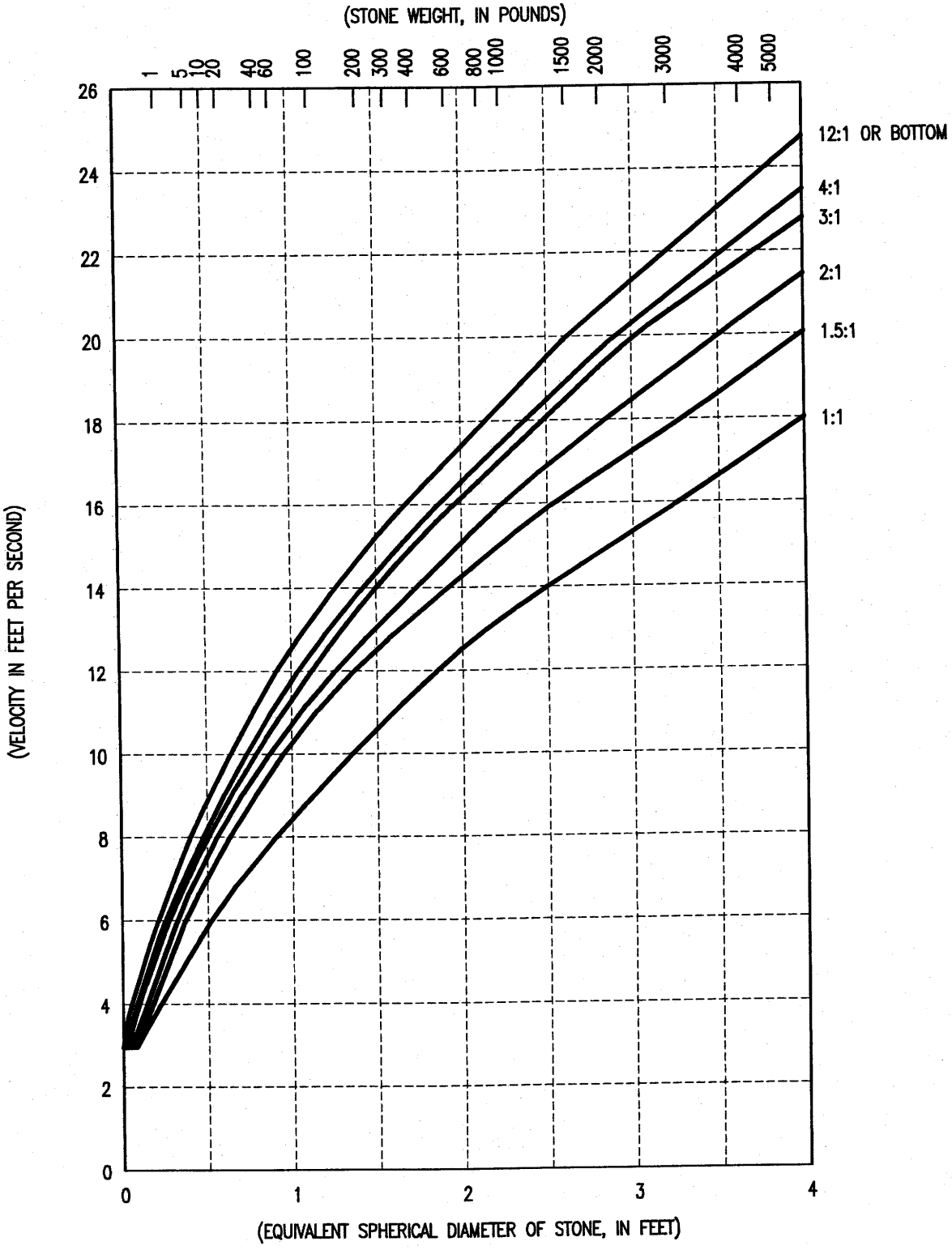


FIGURE 1
Culvert Nomograph

Headwater depth for corrugated-metal pipe culverts with entrance control. [U.S. Bureau of Public Roads.] 238-D-2909.

RIP-RAP CHART



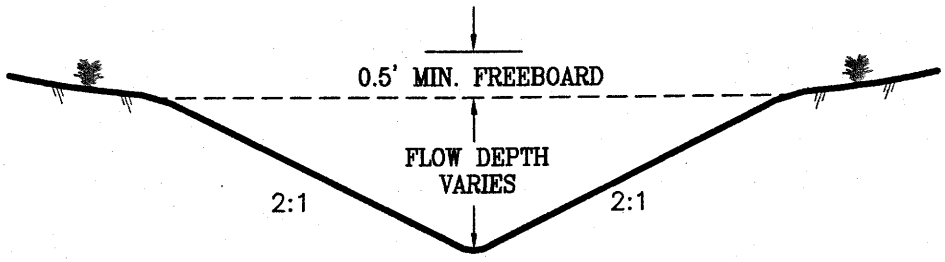
SIZE OF STONE THAT WILL RESIST DISPLACEMENT FOR VARIOUS VELOCITIES AND SIDE SLOPES

NOTE:

ADAPTED FROM REPORT OF SUBCOMMITTE ON SLOPE PROTECTION, AM. SOC. CIVIL ENGINEERS PROC. JUNE 1948.
FOR STONE WEIGHING 165 LBS. PER CUBIC FEET.

Figure 2

UNDISTURBED AND DISTURBED DITCH
TYPICAL SECTION



Note: Flows based on a 10 year – 24 hour event.

* *Used for calculation only. Side slopes may vary; however, minimum flow aea will be maintained.*

FIGURE 3

DESIGN OF SEDIMENT CONTROL STRUCTURES

Design of Sediment Control Structures

3.1 Design and Construction Specifications for Sedimentation Pond

3.2 Sediment Yield

3.3 Sediment Pond Volume

Table 9 Sediment Pond "C" Design

Table 10 Sediment Pond "E" Design

Table 11 Sediment Pond "F" Design

Table 12 Sediment Pond "G" Design

Table 13 Sediment Pond "H" Design

Table 14 Sediment Pond "I" Design

Table 15 Permanent Impoundment Design

Table 16 Depression Area Design

Table 17 Sediment Pond "C" Stage Volume Data (As-Constructed)

Table 18 Sediment Pond "E" Stage Volume Data (Proposed)

Table 19 Sediment Pond "F" Stage Volume Data (Proposed)

Table 20 Sediment Pond "G" Stage Volume Data (Proposed)

Table 21 Sediment Pond "H" Stage Volume Data (Proposed)

Table 22 Sediment Pond "I" Stage Volume Data (Proposed)

Table 23 Permanent Impoundment Stage Volume Data (As-Constructed)

Table 24 Depression Area Stage Volume Data (As-Constructed)

Table 25 Impoundment Discharge Data

Table 26 Sediment Ponds E and F Open-Channel Spillway Stage Discharge Data

3.4 Sediment Pond Summary

3.1 Design and Construction Specifications for Sedimentation Pond

a) All construction of sedimentation ponds will be performed under the direction of a qualified, registered professional engineer.

b) Sediment Pond C, Permanent Impoundment and the Depression Area are all existing impoundments, with no changes proposed. Sediment Ponds E and F are also existing; however, due to site modifications, each of these ponds will be enlarged. The pond dams and overflows will not be modified. Each pond has a cmp principal overflow (18" for E and 12" for F), and an open-channel emergency spillway. Existing ponds A, B and D will be eliminated and replaced with new ponds G, H, and I. Each of the new ponds will be equipped with a cmp principal overflow (G-18", H-12" and I-18"), and an emergency cmp (same sizes) overflow. The emergency overflows will be at least 1.0' above the primary overflows, and at least 2.0' below the top of the dam.

c) The area of pond construction shall be examined for topsoil, and where present in removable quantities, such soil shall be removed separately and stored in an approved topsoil storage location.

d) In areas where fill is to be placed for the pond impoundment structures, natural ground shall be removed for at least 12" below the base of the structure.

e) Native materials shall be used where practical. Fill will be placed in lifts not to exceed 15" and compacted prior to placement of next left. Compaction of all fill materials shall be at least 95%.

f) Rip-rap or other protection (culverts, concrete, etc.) will be placed at all inlets and outlets to prevent scouring. Rip-rap will consist of substantial (non-slaking) rock material of adequate size.

g) **Decanting of the ponds, as required, will be accomplished by use of a portable pump with an inverted inlet, and a pumping capacity of 100 gpm or greater. Samples will be collected prior to decanting of the pond. If the quality of the water meets the requirements of the U.P.D.E.S. Permit, decanting will proceed. Discharge samples will be collected as per the approved U.P.D.E.S. Discharge Permit.**

h) **Slopes of the embankments shall not be steeper than 2h : 1v, inside or outside, with a total of the inslope and outslope not less than 5h : 1v, except where areas of the pond are incised.**

i) **Tops and external slopes of the impoundments will be planted with an approved seed mix to help prevent erosion and promote stability.**

j) **Top width of the embankments shall be not less than (H+35)/5, where H = Height of Dam in feet.**

3.2 Sediment Yield

The Universal Soil Loss Equation (USLE) was used to estimate sediment yield from drainage areas. All soil loss from this area was assumed to be delivered to, and deposited in the respective sedimentation pond.

Erosion rate (A) in tons-per-acre-per-year is determined using the USLE as follows:

$$A = (R)\ (K)\ (LS)\ (CP)$$

where the variables R, K, LS, and CP are defined as follows:

Variable "R" is the rainfall factor which can be estimated from $R = 27P^{2.2}$; where P is the 2-year, 6-hour precipitation value. P for the Gordon Creek area is 0.85" as shown in Section 2.1. Therefore, the estimated value of "R" for this area is 18.88.

Variable "K" is the soil erodibility factor. For disturbed areas, the "K" value is conservatively estimated to be 0.5. "K" is estimated to be 0.035 for undisturbed areas.

Variable "LS" is the length-slope factor. This figure was determined by applying the slope length and percentage for each sub-drainage area to the chart in Figure 5.15, p. 334, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner and Haan, 1983.

Variable "CP" is the control practice factor, which can be divided into a cover and a practice factor. For purposes of these calculations, the following "CP" values were used:

Site	CP Factor
Disturbed Areas	1.20
Undisturbed Areas	0.15

The sediment volume is based on a density of 100 pounds per cubic foot of sediment.

Sediment Yield Calculations - USLE

Drainage	To:	R	K	Acres	Slope Length Feet	Slope (%)	LS	CP	A*	Yield**
DA-1	Pond E	18.88	0.5	1.58	250	5.60	0.95	1.20	10.76	0.008
DA-2	Pond E	18.88	0.5	1.01	100	4.00	0.40	1.20	4.53	0.002
DA-3	Pond E	18.88	0.5	0.80	130	4.61	0.52	1.20	5.98	0.002
DA-4	Pond E	18.88	0.5	1.26	230	2.61	0.32	1.20	3.62	0.002
DA-5	Pond E	18.88	0.5	1.31	420	4.05	0.75	1.20	8.50	0.005
DA-6	Pond E	18.88	0.5	3.09	550	6.18	1.70	1.20	19.26	0.027
DA-7	Pond E	18.88	0.5	1.33	400	5.50	1.15	1.20	13.03	0.008
DA-8	Pond I	18.88	0.5	3.80	700	4.71	1.20	1.20	13.59	0.024
DA-9	Pond I	18.88	0.5	3.57	700	4.71	1.20	1.20	13.59	0.022
DA-10	Pond I	18.88	0.5	5.45	400	4.25	0.75	1.20	8.50	0.021
DA-11	Pond C	18.88	0.5	4.50	600	3.00	0.50	1.20	5.66	0.012
DA-12	Pond C	18.88	0.5	0.42	480	0.50	0.16	1.20	1.81	0.001
DA-13	Pond C	18.88	0.5	0.65	300	4.67	0.75	1.20	8.50	0.003
DA-14	Pond C	18.88	0.5	0.76	600	0.67	0.18	1.20	2.04	0.001
DA-15	Pond C	18.88	0.5	0.34	280	2.86	0.37	1.20	4.19	0.001
DA-16	Pond C	18.88	0.5	3.05	640	3.44	0.63	1.20	7.14	0.010
DA-17	Pond C	18.88	0.5	3.67	68	3.23	0.54	1.20	6.12	0.010
DA-18	Pond C	18.88	0.5	5.04	480	5.42	1.25	1.20	14.16	0.033
DA-19	Pond G	18.88	0.5	1.72	370	2.70	0.38	1.20	4.30	0.002
DA-20	Pond G	18.88	0.5	2.48	250	8.00	1.55	1.20	17.56	0.020
DA-21	Pond G	18.88	0.5	2.46	500	0.80	0.18	1.20	2.04	0.002
DA-22	Pond G	18.88	0.5	5.65	730	3.97	0.88	1.20	9.97	0.026
DA-23	Pond G	18.88	0.5	1.81	360	5.83	1.20	1.20	13.59	0.011
DA-24	Pond G	18.88	0.5	7.48	1150	4.17	1.10	1.20	12.46	0.043
DA-25	Pond G	18.88	0.5	1.40	190	5.26	0.80	1.20	9.06	0.006
DA-26	Pond H	18.88	0.5	0.71	200	3.00	0.35	1.20	3.96	0.001
DA-27	Pond H	18.88	0.5	1.15	440	2.27	0.34	1.20	3.85	0.002
DA-28	Pond H	18.88	0.035	5.84	525	5.71	1.35	0.15	0.13	0.001
DA-30	Pond F	18.88	0.5	1.35	400	5.00	1.05	1.20	11.89	0.007

Drainage	To:	R	K	Acres	Slope Length Feet	Slope (%)	LS	CP	A*	Yield**
DA-31	Pond F	18.88	0.5	1.79	1100	2.18	0.44	1.20	4.98	0.004
DA-32	Pond F	18.88	0.5	2.23	1100	2.18	0.44	1.20	4.98	0.005
DA-38	Pond F	18.88	0.035	10.21	1150	10.87	5.20	0.15	0.52	0.002
DA-39	Pond F	18.88	0.5	7.07	800	7.50	2.50	1.20	28.32	0.092
***DA-40										

* A = tons/acre-year

** Yield = acre-ft/year

*** Bermed Topsoil Pile - No Flow to Pond

	Pond C	Pond E	Pond F	Pond G	Pond H	Pond I
Total Sediment - 1 yr. (ac. ft.)	0.071	0.054	0.110	0.110	0.004	0.067
Total Sediment - 3 yr. (ac. ft.)	0.213	0.162	0.330	0.330	0.012	0.201

3.3 Sediment Pond Volume

The volumes shown in Tables 9 through 14 are from the volumes calculated from the precipitation , runoff and sediment yield for a 10 year - 24 hour precipitation event. The volumes were calculated based on the disturbed areas (and contributing undisturbed areas) runoff values, developed using the design parameters described in this section.

TABLE 9
SEDIMENT POND "C" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 18.43 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	1.490 ac.ft.
5-	Sediment Storage Volume USLE - 0.213	=	0.213 ac.ft.
6-	Direct Precipitation into Pond 0.86 acres x 1.85" / 12 in./ft.	=	0.133 ac.ft.
7-	Total Required Pond Volume 1.490 + 0.213 + 0.133	=	1.836 ac.ft.
*8-	Pond Actual Volume at Principal Spillway	=	4.732 ac.ft.
9-	Peak Flow (25 year - 6 hour event)	=	10.99 cfs

* Existing.

TABLE 10
SEDIMENT POND "E" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 10.38 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	0.840 ac.ft.
5-	Sediment Storage Volume USLE - 0.162	=	0.162 ac.ft.
6-	Direct Precipitation into Pond 0.17 acres x 1.85" / 12 in./ft.	=	0.026 ac.ft.
7-	Total Required Pond Volume 0.840 + 0.162 + 0.026	=	1.028 ac.ft.
*8-	Pond Volume at Principal Spillway	=	1.256 ac.ft.
9-	Peak Flow (25 year - 6 hour event)	=	5.77 cfs

* After proposed enlargement.

TABLE 11
SEDIMENT POND "F" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 12.44 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	1.000 ac.ft.
5-	Undisturbed Watershed = 10.21 Acres		
6-	Runoff Curve Number - 65		
7-	Undisturbed Area Runoff (From Table 4, 10 yr/24 hr)	=	0.080 ac.ft.
8-	Sediment Storage Volume USLE - 0.330	=	0.33 ac.ft.
9-	Direct Precipitation into Pond 0.40 acres x 1.85" / 12 in./ft.	=	0.062 ac.ft.
10-	Total Required Pond Volume 1.000 + 0.080 + 0.330+ 0.062	=	1.472 ac.ft.
*11-	Pond Volume at Principal Spillway	=	1.897 ac.ft.
12-	Peak Flow (25 year - 6 hour event)	=	7.46 cfs

* After proposed enlargement.

TABLE 12
SEDIMENT POND "G" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 23.00 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	1.860 ac.ft.
5-	Sediment Storage Volume USLE - 0.330	=	0.330 ac.ft.
6-	Direct Precipitation into Pond 1.10 acres x 1.85" / 12 in./ft.	=	0.170 ac.ft.
7-	Total Required Pond Volume 1.860 + 0.330 + 0.170	=	2.360 ac.ft.
*8-	Pond Volume at Principal Spillway	=	4.464 ac.ft.
9-	Peak Flow (25 year - 6 hour event)	=	12.67 cfs

* Proposed.

TABLE 13
SEDIMENT POND "H" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 1.86 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 10 yr./24 hr.)	=	0.150 ac.ft.
5-	Undisturbed Watershed = 5.84 Acres		
6-	Weighted Runoff Curve Number - 70		
7-	Undisturbed Area Runoff (From Table 4, 10 yr/24 hr)	=	0.090 ac.ft.
8-	Sediment Storage Volume USLE - 0.012	=	0.012 ac.ft.
9-	Direct Precipitation into Pond 0.22 acres x 1.85" / 12 in./ft.	=	0.034 ac.ft.
10-	Total Required Pond Volume 0.150 + 0.090 + 0.012+ 0.034	=	0.286 ac.ft.
*11-	Pond Volume at Principal Spillway	=	0.595 ac.ft.
12-	Peak Flow (25 year - 6 hour event)	=	1.26 cfs

* Proposed.

TABLE 14
SEDIMENT POND "I" DESIGN

1-	Use 1.85" for 10 year - 24 hour event.		
2-	Disturbed Area Draining to Pond = 12.82 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 9, 10 yr./24 hr.)	=	1.040 ac.ft.
5-	Runoff from Pond C	=	1.836 ac.ft.
*6-	Sediment Storage Volume USLE - 0.201	=	0.201 ac.ft.
7-	Direct Precipitation into Pond 1.43 acres x 1.85" / 12 in./ft.	=	0.220 ac.ft.
8-	Total Required Pond Volume 1.040 + 1.836 + 0.201+ 0.220	=	3.297 ac.ft.
**9-	Pond Volume at Principal Spillway	=	9.832 ac.ft.
***10-	Peak Flow (25 year - 6 hour event) (7.82 cfs + 10.99 cfs)	=	18.81 cfs

* Does not include Pond C Sediment.

** Proposed.

*** Includes Pond C Peak Flow.

TABLE 15
PERMANENT IMPOUNDMENT DESIGN

1-	Use 1.91" for 100 year - 6 hour event.		
2-	Disturbed Area Draining to Pond = 1.47 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 100 yr./6 hr.)	=	0.120 ac.ft.
5-	Undisturbed Watershed = 84.59 Acres		
6-	Weighted Runoff Curve Number - 65		
7-	Undisturbed Area Runoff (From Table 2, 100 yr/6 hr)	=	0.790 ac.ft.
8-	Direct Precipitation into Pond 0.76 acres x 1.91" / 12 in./ft.	=	0.121 ac.ft.
9-	Total Required Pond Volume 0.120 + 0.790 + 0.121	=	1.031 ac.ft.
*10-	Pond Actual Volume	=	1.114 ac.ft.
11-	Peak Flow (100 year - 6 hour event)	=	4.34 cfs

* Existing.

TABLE 16
DEPRESSION AREA DESIGN

1-	Use 1.91" for 100 year - 6 hour event.		
2-	Disturbed Area Draining to Pond = 6.43 acres.		
3-	Runoff Curve Number = CN = 90 (Disturbed)		
4-	Disturbed Area Runoff = (From Table 2, 100 yr./6 hr.)	=	0.550 ac.ft.
5-	Runoff from Permanent Impoundment	=	1.031 ac.ft.
6-	Direct Precipitation into Area 6.43 acres x 1.91" / 12 in./ft.	=	1.023 ac.ft.
7-	Total Required Volume 0.550 + 1.031 + 1.023	=	2.604 ac.ft.
*8-	Actual Volume	=	4.990 ac.ft.

* Existing.

TABLE 17
SEDIMENT POND "C"
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6127.7	804.3	0	0	Bottom of Pond
6130.0	18,075.7	0.498	0.498	
6131.5	-	0.700	1.198	Sediment Cleanout Level
6132.0	22,596.8	0.234	1.432	
6134.0	27,274.0	1.145	2.577	
6136.0	32,557.0	1.374	3.951	
6137.0	35,481.1	0.781	4.732	Principal Spillway
6138.0	38,405.1	0.848	5.580	Emergency Spillway
6140.0	45,286.6	1.921	7.501	Crest of Dam

TABLE 18
SEDIMENT POND "E"
STAGE VOLUME DATA (PROPOSED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6138.0	5,240.5	0	0	Bottom of Pond
6139.5	-	0.201	0.201	Sediment Cleanout Level
6140.0	6,427.5	0.067	0.268	
6142.0	7,720.3	0.325	0.593	
6144.0	10,256.0	0.413	1.006	
6145.0	11,552.2	0.250	1.256	Principal Spillway
6146.0	12,848.3	0.280	1.536	Emergency Spillway
6148.0	15,515.4	0.651	2.187	Crest of Dam

TABLE 19
SEDIMENT POND "F"
STAGE VOLUME DATA (PROPOSED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6166.0	9,121.2	0	0	Bottom of Pond
6168.0	10,585.7	0.452	0.452	Sediment Cleanout Level
6170.0	12,150.7	0.522	0.974	
6172.0	13,816.2	0.596	1.570	
6173.0	14,699.3	0.327	1.897	Principal Spillway
6174.0	15,582.3	0.348	2.245	Emergency Spillway
6176.0	17,448.9	0.758	3.003	Crest of Dam

TABLE 20
SEDIMENT POND "G"
STAGE VOLUME DATA (PROPOSED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6120.0	35,061.0	0	0	Bottom of Pond
6121.2	36,874.0	0.991	0.991	60% Sediment Cleanout Level
6122.0	38,082.0	0.688	1.679	Maximum Sediment Level
6124.0	41,216.0	1.820	3.499	
6125.0	42,839.0	0.965	4.464	Principal Spillway
6126.0	44,461.0	1.002	5.466	Emergency Spillway
6128.0	47,818.0	2.118	7.584	Crest of Dam

TABLE 21
SEDIMENT POND "H"
STAGE VOLUME DATA (PROPOSED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6096.0	3,565.0	0	0	Bottom of Pond
6197.2	4,304.0	0.108	0.108	60% Cleanout Level
6098.0	4,796.0	0.084	0.192	Maximum Sediment Level
6100.0	6,197.0	0.252	0.444	
6101.0	6,970.0	0.151	0.595	Principal Spillway
6102.0	7,743.0	0.169	0.764	Emergency Spillway
6104.0	9,424.0	0.394	1.158	Crest of Dam

TABLE 22
SEDIMENT POND "I"
STAGE VOLUME DATA (PROPOSED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6110.0	39,947.0	0	0	Bottom of Pond
6111.8	43,039.0	1.715	1.715	60% Sediment Cleanout Level
6112.0	43,383.0	0.198	1.913	
6113.0	45,153.0	1.016	2.929	Maximum Sediment Level
6114.0	46,922.0	1.057	3.986	
6116.0	50,566.0	2.169	6.155	
6118.0	54,313.0	2.408	8.563	
6119.0	56,239.0	1.269	9.832	Principal Spillway
6120.0	58,164.0	1.313	11.145	Emergency Spillway
6122.0	62,381.0	2.767	13.912	Crest of Dam

TABLE 23
PERMANENT IMPOUNDMENT
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6192.0	571.8	0	0	Bottom of Upper Cell
6194.0	5,714.4	0.144	0.144	
6195.8	8,472.6	0.293	0.437	Principal Spillway
6196.3	9,238.7	0.102	0.539	Emergency Spillway
6183.5	9,148.3	0.000	0.437	Bottom of Lower Cell
6185.8	16,486.7	0.677	1.114	Overflow - Lower Cell

TABLE 24
DEPRESSION AREA
STAGE VOLUME DATA (AS-CONSTRUCTED)

Elevation	Area (ft^2)	Volume (ac. ft.)	Acc. Volume (ac. ft.)	Remarks
6172.0	16,674.8	0	0	Bottom
6174.0	33,854.8	1.160	1.160	
6176.0	132,985.0	3.830	4.990	Maximum Water Level
6178.0	152,100.6	6.544	11.534	Track Level

TABLE 25
IMPOUNDMENT
DISCHARGE DATA

IMPOUNDMENT POND	SPILLWAY	TYPE SIZE	25/6 FLOW (cfs)	FLOW DEPTH (ft)	REMARKS
C	Principal	18" cmp	10.99	1.14(76% full)	Existing
C	Emergency	18" cmp	10.99	1.14(76% full)	Existing
E	Principal	18" cmp	5.77	0.74 (49% full)	Existing
E	Emergency	Open Channel	5.77	0.47	Existing
F	Principal	18" cmp	7.46	0.86 (58% full)	Proposed
F	Emergency	Open Channel	7.46	0.55	Existing
G	Principal	24" cmp	12.67	1.00 (50% full)	Proposed
G	Emergency	24" cmp	12.67	1.00 (50% full)	Proposed
H	Principal	12" cmp	1.26	0.33 (22% full)	Proposed
H	Emergency	12" cmp	1.26	0.33 (22% full)	Proposed
I	Principal	24" cmp	18.81	1.28 (64% full)	Proposed
I	Emergency	24" cmp	18.81	1.28 (64% full)	Proposed
PI	Principal	18" cmp	4.34	0.63 (42% full)	Existing
PI	Emergency	18" cmp	4.34	0.63 (42% full)	Existing

Notes:

1) **Culverts are calculated on 3 % slope.**
2) **Open-Channel spillways are 5' wide x 1' deep with 2:1 side slopes. (See Table 26)**
3) **Depression Area has no overflow.**

TABLE 26
SEDIMENT PONDS E AND F
OPEN-CHANNEL SPILLWAY
STAGE DISCHARGE DATA

STAGE (ft.)	DISCHARGE (cfs)
0.00	0.00
0.20	1.49
0.40	4.53
0.47	*5.91
0.55	**7.68
0.60	8.90
0.80	14.58
1.00	21.61

Notes: * 25 year - 6 hour Peak Flow from Pond E = 5.77 cfs.
Flow will pass through spillway at a depth of 0.47'.

** 25 year - 6 hour Peak Flow from Pond F = 7.46 cfs.
Flow will pass through spillway at a depth of 0.55'.

Calculations based on Broad Crested Weir Formula

$Q = 3.087\ bH^{1.5}$; Where b = Average Width = $\frac{5 + (5+ 4d)}{2}$

3.4 Sediment Pond Summary

a) The Sediment ponds have been designed to contain the disturbed area (and contributing undisturbed area) runoff from a 10 year - 24 hour precipitation event, along with 3 years of sediment storage capacity. The Permanent Impoundment and Depression Area are sized to contain the runoff from a 100 year - 6 hour precipitation event. Runoff to the ponds will be directed by various ditches and culverts as described in the plan.

b) There will be a total of 6 sediment ponds and 2 additional impoundments on this site. Existing Sediment Ponds A, B and D will be eliminated and replaced with new ponds G, H and I. Existing sediment ponds E and F will be enlarged without changes to the dams. Existing sediment pond C, as well as the Permanent Impoundment and Depression Area will not be changed; however, sediment pond C will now flow to the new pond I, and will no longer be a UPDES discharge point.

c) The ponds will meet a theoretical detention time of 24 hours. All sediment ponds and the Permanent Impoundment are fitted with a combination of principal and emergency overflows sized to carry the runoff from a 25 year - 6 hour precipitation event. Any discharge from the ponds E, F, G, H and I will be in accordance with the approved UPDES Permit.

d) The pond inlets are protected from erosion. The principal spillways, and emergency spillways will also be protected from erosion by the use of culverts, rip-rap and/or belting.

e) The Permanent Impoundment and Depression Area are to be left in place.

f) The ponds have/will be constructed according to the design criteria listed under "Construction Specifications for Sedimentation Ponds".

DESIGN OF DRAINAGE CONTROL STRUCTURES
FOR
RECLAMATION HYDROLOGY

Reclamation Hydrology

4.1 General
4.2 Reclaimed Area Drainage Control
4.3 Restored Channels
4.4 Sediment Ponds

Table 27 Final Reclamation - Drainage Areas Contributing to Channels
Table 28 Final Reclamation - Drainage Structure Flow Summary
Table 29 Final Reclamation - Restored Channel Design Parameters
Table 30 Final Reclamation - Restored Channel Flow Calculations

Figure 4 Restored Channel, Typical Sections

Reclamation Hydrology

4.1 General

The purpose of this section is to describe the plan for control of the permit and adjacent area hydrology during and after reclamation until bond release.

The plans herein described are based on requirements of the regulations and on proven, accepted reclamation techniques used in the Carbon-Emery area. The post-reclamation hydrology is designed to protect the reclaimed site from erosion, to protect the hydrologic regime from adverse impacts, and to meet requirement of DOGM and the landowner, BLM.

Upon completion of operations, all structures will be removed and the area will be recontoured as shown on Plate 8. All culverts and unnecessary ditches and ponds will be removed at that time. The post-reclamation drainage will be as shown on Plate 8.

Undisturbed UD-2 will remain in place, since it was installed prior to the operation, and has been shown to be adequate to carry a 100 year, 6 hour precipitation event.

As described in the following section, all sediment ponds will be removed during final reclamation, and recontoured as shown on Plate 8.

As sediment ponds are removed, any contaminated material will be hauled off to an approved disposal site. The 2-celled Permanent Impoundment will be left in place for wildlife enhancement, and the Depression Area will also remain as a final containment for runoff which was never planned to drain under the pre-existing Utah Railway.

Reclaimed channels are noted with an RC-Numer (i.e. RC-2). Channels are shown on Plate 8, "Reclamation Hydrology".

A typical channel cross-section for each reclaimed channel is shown on Figure 4. Calculated flows for the applicable storm event were then routed through the channels to determine if reclaimed channel sizes were adequate for the design flows. (See Table 30). In all cases, the channels were adequately sized to safely carry the contributing area runoff.

4.2 Reclaimed Area Drainage Control

During final reclamation, all previously installed drainage controls, including the sediment ponds, will be removed. The reclaimed area will be roughened by discontinuous tilling and/or "gouging" the area with a trackhoe bucket. The roughening will create furrows or depressions at approximately 18" deep throughout the reclaimed area. In addition, straw or wood mulch will be used in final seeding of the area. Roughening will continue to the reclaimed channel banks, and the entire reclaimed area, including channels, will be reseeded according to the approved plan.

Prior to removal of the sediment ponds, a series of 3 silt fences will be installed across the main drainage channel below the pond area, as shown on Plate 8. These silt fences will remain as final treatment for runoff from the reclaimed site until Phase II Bond Release requirements are met. These are, however, only secondary sediment controls. The primary sediment control from the reclaimed site will be extensive roughening/gouging, use of mulch and revegetation.

4.3 Restored Channels

The restored channels will have a bottom width of approximately 12' with 2h : 1v side slopes, and the side channels are proposed to have a bottom width of approximately 2' - 4' with 2h : 1v side slopes.

The restored channel sizes were checked adequacy to carry runoff from a 100 year - 6 hour storm event. As shown on Table 30, all channels are adequately sized to carry the projected runoff with at least 0.5' of freeboard. See Figure 4 for a typical section of the reclaimed channels and summary of flow depths and velocities.

4.4 Sediment Ponds

As discussed in Section 4.1, the sediment ponds will be removed during final reclamation. Prior to removal of the pond, a series of 3 silt fences will be placed across the main canyon channel below the pond. Sediment control for the reclamation will be accomplished by extensive roughening/gouging and revegetation of the reclaimed area and installation of sediment traps in the restored channels. The silt fences will act as secondary, final sediment controls. These fences will be maintained until Phase II Bond Release. See Plate 8 "Reclamation Hydrology" for location and reclamation details.

TABLE 27
FINAL RECLAMATION
DRAINAGE AREAS CONTRIBUTING TO CHANNELS

RECLAIMED CHANNEL	DRAINAGE AREAS
RD-1	DA-30, DA-31, DA-32, DA-38, DA-39, DA-40
RD-2	DA-19, DA-20, DA-21, DA-22, DA-23, DA-24, DA-25, ½DA-16, ½DA-17
RD-3	1/4 DA-16, DA-26, DA-27, DA-28
RD-4	DA-11, ½DA-12, DA-14, DA-9, DA-10, ½DA-17, 1/4 DA-16, DA-18
RD-5	1/3 DA-35, DA-36, DA-1, DA-2, DA-3, DA-4, DA-5, DA-6, DA-7, DA-8, ½ DA-12, DA-13, DA-15

Refer to Plate 2 for drainage areas and Plate 8 for reclamation channels.

TABLE 28
FINAL RECLAMATION
DRAINAGE STRUCTURE FLOW SUMMARY

Channel	100/6 cfs
RC-1	12.24
RC-2	22.50
RC-3	3.01
RC-4	20.29
RC-5	13.32

Flows from Table 2.

TABLE 29
FINAL RECLAMATION
RESTORED CHANNEL DESIGN PARAMETERS

Channel	Bottom Width (ft.)	Side Slope H:V	Slope %	Reclaimed Depth (ft.)	Manning's No.
RC-1	4	2:1	3.33	1.5	0.035
RC-2	4	2:1	4.17	1.5	0.035
RC-3	2	2:1	6.15	1.5	0.035
RC-4	4	2:1	4.14	1.5	0.035
RC-5	4	2:1	4.67	1.5	0.035

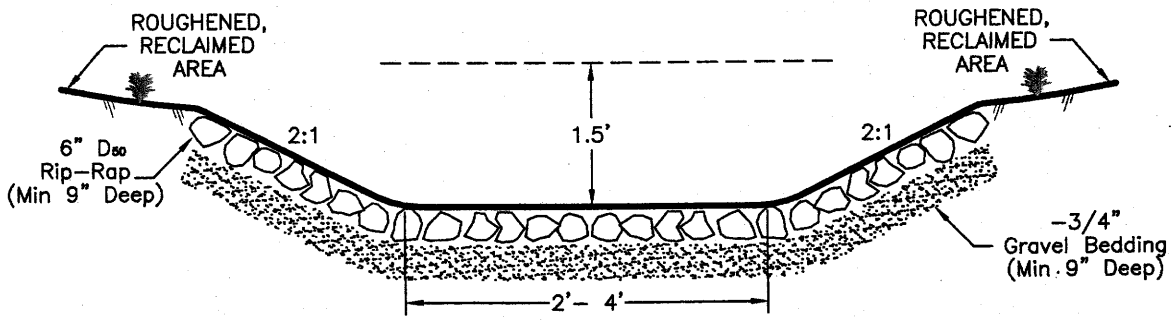
TABLE 30

FINAL RECLAMATION

RESTORED CHANNEL FLOW CALCULATIONS

Channel	RC-1	RC-2	RC-3	RC-4	RC-5
100 yr - 6 hr event (in.)	1.91	1.91	1.91	1.91	1.91
Peak Flow (cfs)	12.24	22.50	3.01	20.29	13.32
Velocity (fps)	4.41	5.77	3.96	5.58	5.10
Req'd Area ($ft.^2$)	2.77	3.90	0.76	3.64	2.61
Flow Depth (ft.)	0.55	0.72	0.29	0.68	0.52

RESTORED CHANNEL
TYPICAL SECTIONS



UTAH REGISTERED #154168 DAN W. GUY PROFESSIONAL ENGINEER

SUMMARY TABLE			
CHANNEL	*FLOW DEPTH (FT.)	FREEBOARD (FT.)	VELOCITY (FPS)
RC-1	0.55	0.95	4.41
RC-2	0.72	0.78	5.77
RC-3	0.29	1.21	3.96
RC-4	0.68	0.82	5.58
RC-5	0.52	0.98	5.10

* BASED ON 100 YEAR - 6 HOUR STORM RUNOFF.

FIGURE 4

APPENDIX 1

COMPUTER BACKUP

Project Title = DA-1 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.6 acres
Hydraulic length = 250.00 feet
Elevation change = 14.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.6 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.59 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-1 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.6 acres
Hydraulic length = 250.00 feet
Elevation change = 14.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.6 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.27 cfs
Discharge volume = 0.13 acre ft

Project Title = DA-1 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.6 acres
Hydraulic length = 250.00 feet
Elevation change = 14.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.6 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.82 cfs
Discharge volume = 0.09 acre ft

Project Title = DA-1 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.6 acres
Hydraulic length = 250.00 feet
Elevation change = 14.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.6 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.24 cfs
Discharge volume = 0.13 acre ft

Project Title = DA-2 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.0 acres
Hydraulic length = 100.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.01 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.0 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.30 cfs
Discharge volume = 0.04 acre ft

Project Title = DA-2 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.0 acres
Hydraulic length = 100.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.01 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.0 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.65 cfs
Discharge volume = 0.08 acre ft

Project Title = DA-2 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.0 acres
Hydraulic length = 100.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.01 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.0 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.42 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-2 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.0 acres
Hydraulic length = 100.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.01 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.0 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.63 cfs
Discharge volume = 0.09 acre ft

Project Title = DA-3 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 130.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.25 cfs
Discharge volume = 0.03 acre ft

Project Title = DA-3 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 130.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.55 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-3 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 130.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.35 cfs
Discharge volume = 0.04 acre ft

Project Title = DA-3 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 130.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.53 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-4 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 230.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.51 cfs
Discharge volume = 0.05 acre ft

Project Title = DA-4 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 230.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.11 cfs
Discharge volume = 0.10 acre ft

Project Title = DA-4 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 230.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.71 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-4 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 230.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.08 cfs
Discharge volume = 0.11 acre ft

Project Title = DA-5 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 420.00 feet
Elevation change = 17.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.57 cfs
Discharge volume = 0.05 acre ft

Project Title = DA-5 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 420.00 feet
Elevation change = 17.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.24 cfs
Discharge volume = 0.11 acre ft

Project Title = DA-5 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 420.00 feet
Elevation change = 17.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.80 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-5 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 420.00 feet
Elevation change = 17.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.21 cfs
Discharge volume = 0.11 acre ft

Project Title = DA-6 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.1 acres
Hydraulic length = 550.00 feet
Elevation change = 34.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.1 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.35 cfs
Discharge volume = 0.12 acre ft

Project Title = DA-6 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.1 acres
Hydraulic length = 550.00 feet
Elevation change = 34.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.1 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 2.95 cfs
Discharge volume = 0.25 acre ft

Project Title = DA-6 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.1 acres
Hydraulic length = 550.00 feet
Elevation change = 34.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.1 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.89 cfs
Discharge volume = 0.17 acre ft

Project Title = DA-6 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.1 acres
Hydraulic length = 550.00 feet
Elevation change = 34.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.1 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.86 cfs
Discharge volume = 0.26 acre ft

Project Title = DA-7 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 400.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.56 cfs
Discharge volume = 0.05 acre ft

Project Title = DA-7 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 400.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.22 cfs
Discharge volume = 0.11 acre ft

Project Title = DA-7 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 400.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.78 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-7 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.3 acres
Hydraulic length = 400.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.19 cfs
Discharge volume = 0.11 acre ft

Project Title = DA-8 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.8 acres
Hydraulic length = 700.00 feet
Elevation change = 33.0 feet.
Concentration time = 0.09 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.67 cfs
Discharge volume = 0.15 acre ft

Project Title = DA-8 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.8 acres
Hydraulic length = 700.00 feet
Elevation change = 33.0 feet.
Concentration time = 0.09 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 3.68 cfs
Discharge volume = 0.31 acre ft

Project Title = DA-8 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.8 acres
Hydraulic length = 700.00 feet
Elevation change = 33.0 feet.
Concentration time = 0.09 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.34 cfs
Discharge volume = 0.21 acre ft

Project Title = DA-8 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.8 acres
Hydraulic length = 700.00 feet
Elevation change = 33.0 feet.
Concentration time = 0.09 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 3.56 cfs
Discharge volume = 0.32 acre ft

Project Title = DA-9 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.6 acres
Hydraulic length = 700.00 feet
Elevation change = 33.0 feet.
Concentration time = 0.09 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.6 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.57 cfs
Discharge volume = 0.14 acre ft

Project Title = DA-9 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.6 acres
Hydraulic length = 700.00 feet
Elevation change = 33.0 feet.
Concentration time = 0.09 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.6 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 3.46 cfs
Discharge volume = 0.29 acre ft

Project Title = DA-9 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.6 acres
Hydraulic length = 700.00 feet
Elevation change = 33.0 feet.
Concentration time = 0.09 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.6 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.20 cfs
Discharge volume = 0.20 acre ft

Project Title = DA-9 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.6 acres
Hydraulic length = 700.00 feet
Elevation change = 33.0 feet.
Concentration time = 0.09 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.6 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 3.35 cfs
Discharge volume = 0.30 acre ft

Project Title = DA-10 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.4 acres
Hydraulic length = 400.00 feet
Elevation change = 17.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.4 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.35 cfs
Discharge volume = 0.22 acre ft

Project Title = DA-10 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.4 acres
Hydraulic length = 400.00 feet
Elevation change = 17.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 5.12 cfs
Discharge volume = 0.44 acre ft

Project Title = DA-10 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.4 acres
Hydraulic length = 400.00 feet
Elevation change = 17.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.4 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 3.28 cfs
Discharge volume = 0.30 acre ft

Project Title = DA-10 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.4 acres
Hydraulic length = 400.00 feet
Elevation change = 17.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 4.97 cfs
Discharge volume = 0.46 acre ft

Project Title = DA-11 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 4.5 acres
Hydraulic length = 600.00 feet
Elevation change = 18.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 4.5 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.94 cfs
Discharge volume = 0.18 acre ft

Project Title = DA-11 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 4.5 acres
Hydraulic length = 600.00 feet
Elevation change = 18.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 4.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 4.31 cfs
Discharge volume = 0.36 acre ft

Project Title = DA-11 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 4.5 acres
Hydraulic length = 600.00 feet
Elevation change = 18.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 4.5 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.73 cfs
Discharge volume = 0.25 acre ft

Project Title = DA-11 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 4.5 acres
Hydraulic length = 600.00 feet
Elevation change = 18.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 4.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 4.17 cfs
Discharge volume = 0.38 acre ft

Project Title = DA-12 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.4 acres
Hydraulic length = 480.00 feet
Elevation change = 2.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.4 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.15 cfs
Discharge volume = 0.02 acre ft

Project Title = DA-12 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.4 acres
Hydraulic length = 480.00 feet
Elevation change = 2.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.36 cfs
Discharge volume = 0.03 acre ft

Project Title = DA-12 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.4 acres
Hydraulic length = 480.00 feet
Elevation change = 2.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.4 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.22 cfs
Discharge volume = 0.02 acre ft

Project Title = DA-12 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.4 acres
Hydraulic length = 480.00 feet
Elevation change = 2.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.34 cfs
Discharge volume = 0.04 acre ft

Project Title = DA-13 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.6 acres
Hydraulic length = 300.00 feet
Elevation change = 14.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.6 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.26 cfs
Discharge volume = 0.03 acre ft

Project Title = DA-13 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.6 acres
Hydraulic length = 300.00 feet
Elevation change = 14.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.6 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.57 cfs
Discharge volume = 0.05 acre ft

Project Title = DA-13 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.6 acres
Hydraulic length = 300.00 feet
Elevation change = 14.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.6 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.36 cfs
Discharge volume = 0.04 acre ft

Project Title = DA-13 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.6 acres
Hydraulic length = 300.00 feet
Elevation change = 14.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.6 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.55 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-14 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 600.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.20 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.27 cfs
Discharge volume = 0.03 acre ft

Project Title = DA-14 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 600.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.20 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.65 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-14 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 600.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.20 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.39 cfs
Discharge volume = 0.04 acre ft

Project Title = DA-14 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 600.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.20 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.62 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-15 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.3 acres
Hydraulic length = 280.00 feet
Elevation change = 8.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.3 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.14 cfs
Discharge volume = 0.01 acre ft

Project Title = DA-15 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.3 acres
Hydraulic length = 280.00 feet
Elevation change = 8.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.31 cfs
Discharge volume = 0.03 acre ft

Project Title = DA-15 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.3 acres
Hydraulic length = 280.00 feet
Elevation change = 8.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.3 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.20 cfs
Discharge volume = 0.02 acre ft

Project Title = DA-15 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.3 acres
Hydraulic length = 280.00 feet
Elevation change = 8.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.30 cfs
Discharge volume = 0.03 acre ft

Project Title = DA-16 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.0 acres
Hydraulic length = 640.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.0 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.32 cfs
Discharge volume = 0.12 acre ft

Project Title = DA-16 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.0 acres
Hydraulic length = 640.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.0 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 2.92 cfs
Discharge volume = 0.25 acre ft

Project Title = DA-16 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.0 acres
Hydraulic length = 640.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.0 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.85 cfs
Discharge volume = 0.17 acre ft

Project Title = DA-16 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.0 acres
Hydraulic length = 640.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.0 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.83 cfs
Discharge volume = 0.26 acre ft

Project Title = DA-17 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.7 acres
Hydraulic length = 680.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.11 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.7 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.55 cfs
Discharge volume = 0.15 acre ft

Project Title = DA-17 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.7 acres
Hydraulic length = 680.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.11 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.7 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 3.45 cfs
Discharge volume = 0.30 acre ft

Project Title = DA-17 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.7 acres
Hydraulic length = 680.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.11 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.7 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.18 cfs
Discharge volume = 0.20 acre ft

Project Title = DA-17 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 3.7 acres
Hydraulic length = 680.00 feet
Elevation change = 22.0 feet.
Concentration time = 0.11 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.7 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 3.33 cfs
Discharge volume = 0.31 acre ft

Project Title = DA-18 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.0 acres
Hydraulic length = 480.00 feet
Elevation change = 26.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.0 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.19 cfs
Discharge volume = 0.20 acre ft

Project Title = DA-18 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.0 acres
Hydraulic length = 480.00 feet
Elevation change = 26.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.0 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 4.77 cfs
Discharge volume = 0.41 acre ft

Project Title = DA-18 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.0 acres
Hydraulic length = 480.00 feet
Elevation change = 26.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.0 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 3.06 cfs
Discharge volume = 0.28 acre ft

Project Title = DA-18 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.0 acres
Hydraulic length = 480.00 feet
Elevation change = 26.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.0 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 4.63 cfs
Discharge volume = 0.43 acre ft

Project Title = DA-19 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.7 acres
Hydraulic length = 370.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.7 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.75 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-19 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.7 acres
Hydraulic length = 370.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.7 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.64 cfs
Discharge volume = 0.14 acre ft

Project Title = DA-19 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.7 acres
Hydraulic length = 370.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.7 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.05 cfs
Discharge volume = 0.10 acre ft

Project Title = DA-19 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.7 acres
Hydraulic length = 370.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.7 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.60 cfs
Discharge volume = 0.15 acre ft

Project Title = DA-20 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.5 acres
Hydraulic length = 250.00 feet
Elevation change = 20.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.5 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.88 cfs
Discharge volume = 0.10 acre ft

Project Title = DA-20 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.5 acres
Hydraulic length = 250.00 feet
Elevation change = 20.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.91 cfs
Discharge volume = 0.20 acre ft

Project Title = DA-20 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.5 acres
Hydraulic length = 250.00 feet
Elevation change = 20.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.5 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.23 cfs
Discharge volume = 0.14 acre ft

Project Title = DA-20 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.5 acres
Hydraulic length = 250.00 feet
Elevation change = 20.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.85 cfs
Discharge volume = 0.21 acre ft

Project Title = DA-21 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.5 acres
Hydraulic length = 500.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.5 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.92 cfs
Discharge volume = 0.10 acre ft

Project Title = DA-21 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.5 acres
Hydraulic length = 500.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 2.12 cfs
Discharge volume = 0.20 acre ft

Project Title = DA-21 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.5 acres
Hydraulic length = 500.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.5 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.31 cfs
Discharge volume = 0.14 acre ft

Project Title = DA-21 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.5 acres
Hydraulic length = 500.00 feet
Elevation change = 4.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.03 cfs
Discharge volume = 0.21 acre ft

Project Title = DA-22 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.7 acres
Hydraulic length = 730.00 feet
Elevation change = 29.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.7 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.41 cfs
Discharge volume = 0.23 acre ft

Project Title = DA-22 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.7 acres
Hydraulic length = 730.00 feet
Elevation change = 29.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.7 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 5.35 cfs
Discharge volume = 0.46 acre ft

Project Title = DA-22 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.7 acres
Hydraulic length = 730.00 feet
Elevation change = 29.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.7 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 3.39 cfs
Discharge volume = 0.31 acre ft

Project Title = DA-22 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 5.7 acres
Hydraulic length = 730.00 feet
Elevation change = 29.0 feet.
Concentration time = 0.10 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.7 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 5.17 cfs
Discharge volume = 0.48 acre ft

Project Title = DA-23 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 360.00 feet
Elevation change = 21.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.74 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-23 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 360.00 feet
Elevation change = 21.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.61 cfs
Discharge volume = 0.15 acre ft

Project Title = DA-23 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 360.00 feet
Elevation change = 21.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.03 cfs
Discharge volume = 0.10 acre ft

Project Title = DA-23 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 360.00 feet
Elevation change = 21.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.56 cfs
Discharge volume = 0.15 acre ft

Project Title = DA-24 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 7.5 acres
Hydraulic length = 1150.00 feet
Elevation change = 48.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 7.5 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.79 cfs
Discharge volume = 0.30 acre ft

Project Title = DA-24 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 7.5 acres
Hydraulic length = 1150.00 feet
Elevation change = 48.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 7.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 6.43 cfs
Discharge volume = 0.60 acre ft

Project Title = DA-24 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 7.5 acres
Hydraulic length = 1150.00 feet
Elevation change = 48.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 7.5 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 3.98 cfs
Discharge volume = 0.42 acre ft

Project Title = DA-24 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 7.5 acres
Hydraulic length = 1150.00 feet
Elevation change = 48.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 7.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 6.17 cfs
Discharge volume = 0.63 acre ft

Project Title = DA-25 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.4 acres
Hydraulic length = 190.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.4 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.49 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-25 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.4 acres
Hydraulic length = 190.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.06 cfs
Discharge volume = 0.11 acre ft

Project Title = DA-25 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.4 acres
Hydraulic length = 190.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.4 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.68 cfs
Discharge volume = 0.08 acre ft

Project Title = DA-25 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.4 acres
Hydraulic length = 190.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.03 cfs
Discharge volume = 0.12 acre ft

Project Title = DA-26 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.7 acres
Hydraulic length = 200.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.7 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.27 cfs
Discharge volume = 0.03 acre ft

Project Title = DA-26 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.7 acres
Hydraulic length = 200.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.7 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.58 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-26 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.7 acres
Hydraulic length = 200.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.7 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.38 cfs
Discharge volume = 0.04 acre ft

Project Title = DA-26 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.7 acres
Hydraulic length = 200.00 feet
Elevation change = 6.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.7 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.57 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-27 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.1 acres
Hydraulic length = 440.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.08 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.1 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.51 cfs
Discharge volume = 0.05 acre ft

Project Title = DA-27 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.1 acres
Hydraulic length = 440.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.08 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.1 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.12 cfs
Discharge volume = 0.09 acre ft

Project Title = DA-27 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.1 acres
Hydraulic length = 440.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.08 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.1 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.72 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-27 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.1 acres
Hydraulic length = 440.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.08 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.1 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.09 cfs
Discharge volume = 0.10 acre ft

Project Title = DA-28 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 70.0
Area = 5.8 acres
Hydraulic length = 525.00 feet
Elevation change = 30.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.09 cfs
Discharge volume = 0.01 acre ft

Project Title = DA-28 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 70.0
Area = 5.8 acres
Hydraulic length = 525.00 feet
Elevation change = 30.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.89 cfs
Discharge volume = 0.09 acre ft

Project Title = DA-28 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 70.0
Area = 5.8 acres
Hydraulic length = 525.00 feet
Elevation change = 30.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.16 cfs
Discharge volume = 0.04 acre ft

Project Title = DA-28 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 70.0
Area = 5.8 acres
Hydraulic length = 525.00 feet
Elevation change = 30.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 5.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.64 cfs
Discharge volume = 0.10 acre ft

Project Title = DA-29 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.5 acres
Hydraulic length = 350.00 feet
Elevation change = 18.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.5 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.61 cfs
Discharge volume = 0.06 acre ft

Project Title = DA-29 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.5 acres
Hydraulic length = 350.00 feet
Elevation change = 18.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.32 cfs
Discharge volume = 0.12 acre ft

Project Title = DA-29 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.5 acres
Hydraulic length = 350.00 feet
Elevation change = 18.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.5 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.85 cfs
Discharge volume = 0.08 acre ft

Project Title = DA-29 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.5 acres
Hydraulic length = 350.00 feet
Elevation change = 18.0 feet.
Concentration time = 0.04 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.28 cfs
Discharge volume = 0.12 acre ft

Project Title = DA-30 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.4 acres
Hydraulic length = 400.00 feet
Elevation change = 20.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.4 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.57 cfs
Discharge volume = 0.05 acre ft

Project Title = DA-30 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.4 acres
Hydraulic length = 400.00 feet
Elevation change = 20.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.25 cfs
Discharge volume = 0.11 acre ft

Project Title = DA-30 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.4 acres
Hydraulic length = 400.00 feet
Elevation change = 20.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.4 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.80 cfs
Discharge volume = 0.08 acre ft

Project Title = DA-30 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.4 acres
Hydraulic length = 400.00 feet
Elevation change = 20.0 feet.
Concentration time = 0.05 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.21 cfs
Discharge volume = 0.11 acre ft

Project Title = DA-31 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 1100.00 feet
Elevation change = 24.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.64 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-31 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 1100.00 feet
Elevation change = 24.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.52 cfs
Discharge volume = 0.14 acre ft

Project Title = DA-31 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 1100.00 feet
Elevation change = 24.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.93 cfs
Discharge volume = 0.10 acre ft

Project Title = DA-31 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 1100.00 feet
Elevation change = 24.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.45 cfs
Discharge volume = 0.15 acre ft

Project Title = DA-32 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.2 acres
Hydraulic length = 1100.00 feet
Elevation change = 24.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.2 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.80 cfs
Discharge volume = 0.09 acre ft

Project Title = DA-32 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.2 acres
Hydraulic length = 1100.00 feet
Elevation change = 24.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.90 cfs
Discharge volume = 0.18 acre ft

Project Title = DA-32 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.2 acres
Hydraulic length = 1100.00 feet
Elevation change = 24.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.2 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.16 cfs
Discharge volume = 0.12 acre ft

Project Title = DA-32 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 2.2 acres
Hydraulic length = 1100.00 feet
Elevation change = 24.0 feet.
Concentration time = 0.21 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.81 cfs
Discharge volume = 0.19 acre ft

Project Title = DA-33 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 6.4 acres
Hydraulic length = 600.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.13 hours
Unit hydrograph type = Disturbed

-- Total Area = 6.4 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.56 cfs
Discharge volume = 0.26 acre ft

Project Title = DA-33 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 6.4 acres
Hydraulic length = 600.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.13 hours
Unit hydrograph type = Disturbed

-- Total Area = 6.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 5.81 cfs
Discharge volume = 0.52 acre ft

Project Title = DA-33 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 6.4 acres
Hydraulic length = 600.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.13 hours
Unit hydrograph type = Disturbed

-- Total Area = 6.4 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 3.64 cfs
Discharge volume = 0.36 acre ft

Project Title = DA-33 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 6.4 acres
Hydraulic length = 600.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.13 hours
Unit hydrograph type = Disturbed

-- Total Area = 6.4 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 5.59 cfs
Discharge volume = 0.55 acre ft

Project Title = DA-34 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 81.5 acres
Hydraulic length = 2900.00 feet
Elevation change = 260.0 feet.
Concentration time = 0.27 hours
Unit hydrograph type = Disturbed

-- Total Area = 81.5 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.37 cfs
Discharge volume = 0.03 acre ft

Project Title = DA-34 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 81.5 acres
Hydraulic length = 2900.00 feet
Elevation change = 260.0 feet.
Concentration time = 0.27 hours
Unit hydrograph type = Disturbed

-- Total Area = 81.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 1.73 cfs
Discharge volume = 0.66 acre ft

Project Title = DA-34 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 81.5 acres
Hydraulic length = 2900.00 feet
Elevation change = 260.0 feet.
Concentration time = 0.27 hours
Unit hydrograph type = Disturbed

-- Total Area = 81.5 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 1.21 cfs
Discharge volume = 0.19 acre ft

Project Title = DA-34 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 81.5 acres
Hydraulic length = 2900.00 feet
Elevation change = 260.0 feet.
Concentration time = 0.27 hours
Unit hydrograph type = Disturbed

-- Total Area = 81.5 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.99 cfs
Discharge volume = 0.76 acre ft

Project Title = DA-35 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 3.0 acres
Hydraulic length = 200.00 feet
Elevation change = 86.0 feet.
Concentration time = 0.01 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.0 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.01 cfs
Discharge volume = 0.00 acre ft

Project Title = DA-35 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 3.0 acres
Hydraulic length = 200.00 feet
Elevation change = 86.0 feet.
Concentration time = 0.01 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.0 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.06 cfs
Discharge volume = 0.02 acre ft

Project Title = DA-35 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 3.0 acres
Hydraulic length = 200.00 feet
Elevation change = 86.0 feet.
Concentration time = 0.01 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.0 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.03 cfs
Discharge volume = 0.01 acre ft

Project Title = DA-35 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 3.0 acres
Hydraulic length = 200.00 feet
Elevation change = 86.0 feet.
Concentration time = 0.01 hours
Unit hydrograph type = Disturbed

-- Total Area = 3.0 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.07 cfs
Discharge volume = 0.03 acre ft

Project Title = DA-36 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 2.2 acres
Hydraulic length = 820.00 feet
Elevation change = 106.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.2 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.01 cfs
Discharge volume = 0.00 acre ft

Project Title = DA-36 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 2.2 acres
Hydraulic length = 820.00 feet
Elevation change = 106.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.07 cfs
Discharge volume = 0.02 acre ft

Project Title = DA-36 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 2.2 acres
Hydraulic length = 820.00 feet
Elevation change = 106.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.2 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.03 cfs
Discharge volume = 0.01 acre ft

Project Title = DA-36 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 2.2 acres
Hydraulic length = 820.00 feet
Elevation change = 106.0 feet.
Concentration time = 0.06 hours
Unit hydrograph type = Disturbed

-- Total Area = 2.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.09 cfs
Discharge volume = 0.02 acre ft

Project Title = DA-37 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 202.8 acres
Hydraulic length = 5600.00 feet
Elevation change = 290.0 feet.
Concentration time = 0.68 hours
Unit hydrograph type = Disturbed

-- Total Area = 202.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.71 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-37 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 202.8 acres
Hydraulic length = 5600.00 feet
Elevation change = 290.0 feet.
Concentration time = 0.68 hours
Unit hydrograph type = Disturbed

-- Total Area = 202.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 3.42 cfs
Discharge volume = 1.64 acre ft

Project Title = DA-37 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 202.8 acres
Hydraulic length = 5600.00 feet
Elevation change = 290.0 feet.
Concentration time = 0.68 hours
Unit hydrograph type = Disturbed

-- Total Area = 202.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.66 cfs
Discharge volume = 0.47 acre ft

Project Title = DA-37 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 202.8 acres
Hydraulic length = 5600.00 feet
Elevation change = 290.0 feet.
Concentration time = 0.68 hours
Unit hydrograph type = Disturbed

-- Total Area = 202.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 6.89 cfs
Discharge volume = 1.89 acre ft

Project Title = DA-38 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 9.1 acres
Hydraulic length = 1800.00 feet
Elevation change = 170.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 9.1 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.04 cfs
Discharge volume = 0.00 acre ft

Project Title = DA-38 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 9.1 acres
Hydraulic length = 1800.00 feet
Elevation change = 170.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 9.1 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.19 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-38 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 9.1 acres
Hydraulic length = 1800.00 feet
Elevation change = 170.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 9.1 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.13 cfs
Discharge volume = 0.02 acre ft

Project Title = DA-38 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 9.1 acres
Hydraulic length = 1800.00 feet
Elevation change = 170.0 feet.
Concentration time = 0.16 hours
Unit hydrograph type = Disturbed

-- Total Area = 9.1 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.32 cfs
Discharge volume = 0.08 acre ft

Project Title = DA-39 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 202.8 acres
Hydraulic length = 5600.00 feet
Elevation change = 290.0 feet.
Concentration time = 0.68 hours
Unit hydrograph type = Disturbed

-- Total Area = 202.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.71 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-39 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 202.8 acres
Hydraulic length = 5600.00 feet
Elevation change = 290.0 feet.
Concentration time = 0.68 hours
Unit hydrograph type = Disturbed

-- Total Area = 202.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 3.42 cfs
Discharge volume = 1.64 acre ft

Project Title = DA-39 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 202.8 acres
Hydraulic length = 5600.00 feet
Elevation change = 290.0 feet.
Concentration time = 0.68 hours
Unit hydrograph type = Disturbed

-- Total Area = 202.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 2.66 cfs
Discharge volume = 0.47 acre ft

Project Title = DA-39 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 65.0
Area = 202.8 acres
Hydraulic length = 5600.00 feet
Elevation change = 290.0 feet.
Concentration time = 0.68 hours
Unit hydrograph type = Disturbed

-- Total Area = 202.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 6.89 cfs
Discharge volume = 1.89 acre ft

Project Title = DA-40 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 35.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.32 cfs
Discharge volume = 0.07 acre ft

Project Title = DA-40 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 35.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.69 cfs
Discharge volume = 0.14 acre ft

Project Title = DA-40 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 35.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.45 cfs
Discharge volume = 0.10 acre ft

Project Title = DA-40 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.8 acres
Hydraulic length = 35.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.67 cfs
Discharge volume = 0.15 acre ft

Project Title = A-1 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 150.00 feet
Elevation change = 8.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.27 cfs
Discharge volume = 0.03 acre ft

Project Title = A-1 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 150.00 feet
Elevation change = 8.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.59 cfs
Discharge volume = 0.07 acre ft

Project Title = A-1 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 150.00 feet
Elevation change = 8.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.38 cfs
Discharge volume = 0.05 acre ft

Project Title = A-1 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.8 acres
Hydraulic length = 150.00 feet
Elevation change = 8.0 feet.
Concentration time = 0.02 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.8 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.57 cfs
Discharge volume = 0.07 acre ft

Project Title = A-2 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.3 acres
Hydraulic length = 230.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.3 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.10 cfs
Discharge volume = 0.01 acre ft

Project Title = A-2 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.3 acres
Hydraulic length = 230.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.21 cfs
Discharge volume = 0.02 acre ft

Project Title = A-2 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.3 acres
Hydraulic length = 230.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.3 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.14 cfs
Discharge volume = 0.01 acre ft

Project Title = A-2 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.3 acres
Hydraulic length = 230.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.03 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.3 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.21 cfs
Discharge volume = 0.02 acre ft

Project Title = A-8 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.2 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.21 cfs
Discharge volume = 0.05 acre ft

Project Title = A-8 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.44 cfs
Discharge volume = 0.09 acre ft

Project Title = A-8 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.2 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.29 cfs
Discharge volume = 0.06 acre ft

Project Title = A-8 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.43 cfs
Discharge volume = 0.10 acre ft

Project Title = A-9 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.2 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.03 cfs
Discharge volume = 0.01 acre ft

Project Title = A-9 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.07 cfs
Discharge volume = 0.01 acre ft

Project Title = A-9 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.2 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.04 cfs
Discharge volume = 0.01 acre ft

Project Title = A-9 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 0.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 0.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.07 cfs
Discharge volume = 0.02 acre ft

Project Title = A-10 (10/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.2 acres

-- Storm data
Total precipitation = 1.2 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.21 cfs
Discharge volume = 0.05 acre ft

Project Title = A-10 (10/24)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS Type 2 storm, 24 hour storm
Peak Discharge = 0.45 cfs
Discharge volume = 0.10 acre ft

Project Title = A-10 (25/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.2 acres

-- Storm data
Total precipitation = 1.5 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.29 cfs
Discharge volume = 0.07 acre ft

Project Title = A-10 (100/6)
WATERSHED HYDROGRAPH
Inflow into structure # 1
Structure type: Null

-- Watershed data for watershed # 1
Curve number = 90.0
Area = 1.2 acres
Hydraulic length = 30.00 feet
Elevation change = 10.0 feet.
Concentration time = 0.00 hours
Unit hydrograph type = Disturbed

-- Total Area = 1.2 acres

-- Storm data
Total precipitation = 1.9 inches
Storm type = SCS 6 hour design storm
Peak Discharge = 0.44 cfs
Discharge volume = 0.10 acre ft

APPENDIX S
2008 MODIFICATION PLAN

WILDCAT LOADOUT
2008 MODIFICATION PLAN
JANUARY 30, 2008

The Wildcat Mining and Reclamation Plan was last approved and incorporated in May, 2006. Since that time there have been three developments that involve changes in the permit, namely:

1) A conceptual plan has been agreed upon (by the Division and Andalex Resources) to address Division Order DO-04. This Order, formally known as "Design Drawings and Specifications", generally relates to the problem of wind-blown fines that have left the permit area. This plan, which addresses the requirements of the Order, are included in this amendment.

2) Due to increased production from the mines the primary coal storage area around the radial stacker needs to be expanded. This amendment includes the expansion of the coal storage pad by approximately 3.5 acres.

3) Due to the increased operational requirements, an equipment and material storage area is to be added to the west side of the facility. This storage area will be about six acres in size.

These three changes are herein-after referred to collectively as the "2008 Modification Plan". All of these three changes involve additional disturbance, new topsoil removal and storage areas, additional sediment control structures, and increased reclamation and bonding commitments. The changes involving each individual element of the plan become linked with the other elements and the overall existing Mining and Reclamation Plan. Therefore, this plan amendment includes the addition of all three components which are described in detail below. Because the plan amendment involves issues of right of entry (Ch. 1), soils (Ch. 2), vegetation (Ch. 3), air quality (Ch. 4), engineering and reclamation (Ch. 5), sediment and drainage control (Ch. 7), and bonding (Ch. 8), the detailed description contained in this Appendix is by reference made to be an integral part of the text of each chapter.

The Wildcat MRP was recently re-formatted to the newer R645 regulations. Since this reformatted MRP was recently approved and incorporated, text changes for the specific regulations under this submittal are as minimal as possible and are made only where necessary to avoid inconsistencies. The detailed descriptive narrative included in this introduction is intended to adequately

address most of the regulations (in addition to the specific changes in the MRP sections themselves). Therefore, responses to specific issues in individual sections of each chapter will often be made by reference to this Appendix, "2008 Modification Plan". All discussion relevant to this Modification Plan is presented in the MRP in italics to differentiate it from the previously approved reformatted version.

1) DIVISION ORDER DO-04, WIND-BLOWN FINES:

On August 9, 2004, the Division issued Order DO-04 which requires Andalex to address the issue of wind-blown fines arising from the operation of the loadout facility, primarily from the stockpiles and stackers, and from truck traffic on the roads. Over the past 24 years of operation, coal fines have drifted onto the undisturbed topsoil downwind from the primary coal storage area, and in some areas have blown beyond the existing DOGM permit area. This has involved certain areas within the eastern part of the property which are down-wind from facilities in the direction of the prevailing winds in this area.

On February 5, 2007 the BLM approved an amendment to Right-of-Way U-48027 which expanded the size of the grant from 100 acres to 270 acres (See Appendix B-12A and Plate 1). (It is important to note that this is a non-exclusive areal right-of-way, and that there are numerous other equally valid rights-of-way which occupy much of this same area. For example, overlapping rights-of-ways exist for the Utah Railway tracks, the State Highway 139, the Carbon County Consumers Road, the by-pass road, the Trestle public road, Rocky Mountain Power 46 KV powerline, Phillip Petroleum's gas well and pipeline corridor, and Hidden Splendor shop facility. BLM determined the final 270 acre configuration in part to "square up" the boundary for administrative purposes. Being a non-exclusive right-of-way means there is no conflict among grantees, and no inherent liability from one grantee to the next, as long as each grantee's activities are within the terms of their respective right-of-way.) Most of the increased area of the expanded right-of-way was on the east side of the property where the accumulated coal fines were at issue. Indeed, the primary reason for granting the expanded right-of-way was to allow additional area to construct drainage control structures to confine and contain the wind-blown coal fines. The Environmental Analysis prepared by the BLM addressed the issue specifically (See Appendix T). The overall concept approved by the BLM included the construction of diversion ditches around the perimeter of the accumulation zone, leading to new sediment ponds located down-drainage from the

existing ponds. In this manner no wind-blown coal fines would leave the property, and no coal fines would make their way into any of the undisturbed natural drainages.

In addition to preventing the fines from leaving the property it was also necessary to address the issue of the coal fines which had accumulated on the existing undisturbed topsoil located near the downwind side of the coal storage pile. To better quantify the areal extent and depth of the coal fines accumulation E.I.S. (Environmental Industrial Services) conducted an intensive survey of the area (see Appendix U). More than 300 locations were surveyed for fines accumulation, and a map was prepared which depicts the results. The study showed that the majority of the fines were deposited within 150' of the existing coal storage area, with highest concentration occurring in the topographic low depression area in which existing Sediment Pond B is located. The rate of accumulation generally decreases exponentially with distance from the coal-pile area.

In consultation with Division staff, it has been determined that the most effective means of addressing the Division order is through a two-phase construction approach;

1) Phase 1 construction would be initiated immediately upon approval of the plan, and would done specifically to address the Division order.

2) Phase 2 construction would be involve the larger project of expanding the coal storage area. This phase 2 expansion project could be done immediately upon approval of the plan, or could be done at a latter date depending on a combination of variable factors such as mine production, sales contracts, coal quality blending requirements, weather constraints and other operational considerations. Elements of phase 2 construction are designed to mi

2) PHASE 1, OVERVIEW:

Phase 1 construction focuses on the drainage area around and below existing Sediment Pond B. As mentioned previously, this is the area where the most of the coal fines accumulation is concentrated, and is the area that was mainly responsible for the issuance of the Division Order. Therefore, phase 1 construction is the primary instrument for addressing the existing coal fines situation cited in the Order. During this phase a new, larger Sediment Pond G-1 would be constructed down-drainage from existing Pond B, immediately west of the Trestle road and adjacent to the existing gas-well disturbed area. This new Pond G-1 would serve as a replacement for Pond B. After Pond G-1 has

been constructed and is operational Pond B can be removed. The coal fines in this depressional area above and below Pond B would then be removed with mechanical equipment (grader, backhoe, etc) and hauled to the coal stockpile where it would be blended with ROM coal. During removal of the coal fines care would be taken to minimize disturbance of the underlying topsoil.

After the coal fines have been removed, topsoil in this area would then be salvaged to a depth of 24 inches. Salvaged topsoil will be stored within the outer embankment of the new Pond G-1 impoundment structure as shown on Plate 3d-a.

Prior to any construction, interim sediment control structures will be put in place. These will include silt fences and/or straw bales located down-drainage from any new construction to ensure that no untreated drainage leaves the permit area. In total, phase 1 construction would involve about 3.5 acres of additional surface disturbance, including the new drainage area into Pond G-1, and the pond impoundment itself. It should be noted that Pond G-1 is designed and will be constructed to accommodate the additional disturbed area associated with phase 1 construction. However, under phase 2 construction, as described below, Pond G-1 will be enlarged into Pond G.

An additional source of dust is PR 5, which is the access road around the eastern edge of the existing coal-pile area. This road was never initially intended to accommodate heavy truck traffic, but has recently been pressed into service because of the increased production from the mines, and contract commitments that require segregated storage for certain customers. Presently the road is built on native material, which contributes to the dusting situation. Under phase 1 the truck haul portion of this road, as well as the ramp leading up to the coal pad, will be graveled to provide a suitable roadbase. This newly graveled portion will then be treated with mag chloride and/or water as necessary in the future to control fugitive dust. Also, a travelway will be maintained around the outer perimeter of the existing coalpad where truck travel will be maintained as much as possible for those trucks which load and unload near the live storage of the coalpile. This perimeter travelway, which will be part of the operational pad, will also be treated with water as needed to control fugitive dust. Speed limits of 5 mph on and around the pad will be enforced also for dust control. Refer to Plate 1A-a for an overview of phase 1 construction.

3) PHASE 2, OVERVIEW:

Phase 2 construction provides for enlarging the coal storage pad. As a subset of the construction plan, phase 2 would also incorporate additional features to minimize future impacts from wind-blown and/or water transported coal fines. In consultation with Division staff it was determined that the most effective means of protecting the resources within the Phase 2 construction area was to strip the topsoil in this area and stockpile it farther away from the coal storage facilities. This is to be done in a 150' wide swath around the eastern edge of the existing and proposed extended coal storage area. This area is shown on Plate 1A and is called the "drop zone".

The drop zone is intended not only as a topsoil salvage area but as a area where coal fines in the future can drop without harm to other resources. It should be noted that this new drop zone will be 150' beyond any existing or new coal-pile area, but because the coal storage area will itself be expanded to the east, the coal fines problem should be further alleviated because one source of airborne coal fines is the drop-point from the existing radial stacker. The drop zone will not only be 150' from the edge of the (new) coal-pile area but will be nearly 250' additionally removed from the existing stacker drop-point measured in the down-wind direction.

The expansion of the coal storage area and the creation of the 150' wide drop zone will require that Sediment Ponds A and B be removed. Under phase 2, three additional sediment ponds (Ponds G, H and I) will be constructed down-drainage from the drop zone (See Plate 1A). As noted previously, Pond G will be constructed as an enlargement of Pond G-1 constructed during phase 1. Even with the extended drop zone (and the increased distance away from the stacker drop-points) there is a possibility that some coal fines may still be blown beyond the drop zone, especially in the event of extraordinarily strong winds. Based on the existing surveys (which reflect nearly 25 years of previous operation experience at Wildcat) such future accumulations are expected to be slight. However, to insure that all wind-blown fines, however slight, are confined and contained within the property, a set of diversion ditches will be constructed (See Plates 1A and 2), and the new sed ponds will be located such that effectively all coal fines will be prevented from leaving the property and getting into the natural drainages downstream from the loadout facility.

The drop zone, the perimeter ditches and the new sediment

ponds are meant to control and treat much of the coal fines which originate from the coal-pile area and specifically from the stacker drop-points. As noted previously, an additional source of dust is PR 5, which is the access road around the eastern edge of the existing coal-pile area. . Under phase 1 this road will remain temporarily in its present location. Under phase 2 construction this road will be relocated as the coal storage area is expanded to the east. In either case, Andalex commits that the truck-haul portion of this road will be re-constructed with a substantial gravel base, and that the road will be treated with mag chloride and/or water as necessary in the future to control fugitive dust.

4) EXPANSION OF COAL PILE STORAGE AREA:

To accommodate the increased coal production from the mines it is necessary to expand the primary coal storage area around the radial stacker. This will involve adding approximately 3.5 acres to the existing storage pad. (Andalex applied for a minor change to the air quality permit from the Utah Division of Air Quality for the increased storage area on March 6, 2007). The pad will be extended by sloping off the existing storage pad, by hauling in coal mine waste (from the existing refuse pile at Wildcat) for deposit, and by re-contouring and smoothing out the surface of the expanded storage area/drop zone (see Plate 1A). Prior to topsoil salvaging operations, excessive coal fines on the surface (greater than 6" deep) will be removed by using a grader and track-hoe. This cleaned-up coal fines material will be either put back into the active coal storage area to be loaded out, or if the quality is too poor will be placed in the existing coal refuse pile on the west side of the facility. Prior to pad construction, topsoil will then be removed from the new storage area, and from the adjacent drop zone. Twenty four inches (24") of topsoil will be salvaged from this combined area. Topsoil will be salvaged with a dozer and/or a track hoe/dump truck combination. Topsoil will be salvaged from the area and placed in several linear piles to be located around the southeastern perimeter of the drop zone. Four piles will be constructed, as depicted on Plate 1A. These piles will be long and will generally not exceed 12'-15' high, and the width will vary according to the volume from the associated salvage area. Side slopes will not exceed 2H:1V. Plates 13A and 13B give an approximation of the proposed pile dimensions. Existing topsoil pile A will remain in its present location and will essentially be subsumed by the construction of new topsoil pile M.

The topsoil piles will be located down-wind beyond the drop

zone and should be adequately protected from future wind-blown fines. However, there will always be a slight likelihood that some coal fines will eventually make their way to the piles. Therefore, to protect the piles against any potential from future coal fines contamination an additional 6" of extra material will be placed over the top of each pile. This additional 6" layer will constitute a protective cap layer for the pile. This cap layer will be made of material which is, in and of itself, suitable topsoil material. According to the most recent topsoil survey done in this area (see Appendix D, Supplement) native material down to a depth of several feet are acceptable topsoil. Therefore by using more of the existing material as the cap layer the topsoil pile itself will remain protected without fear of contamination from the cap layer. If, at the time of final reclamation, it is determined (with concurrence from the Division) that the cap layer is too contaminated with coal fines to use for topsoil, the cap layer will be removed and disposed of as coal mine waste according to the existing approved reclamation plan. Or the excess fines can simply be vacuumed off first, if this option is acceptable to the Division at the time. If however, the cap layer is not contaminated it will be used along with the rest of the pile as suitable topsoil for reclamation. This determination will be made at the time of final reclamation. The volume of cap layer will not be calculated into the volume of the topsoil pile in determining topsoil balance for reclamation purposes. It should be noted that we do not expect much if any coal fines accumulation on the new topsoil piles, given the increased distance away from the stacker drop-points and the body of the main coal pile. But the measures described above are "just-in-case" contingencies, to provide a high degree of assurance that the stockpiled topsoil resource will be in optimum condition when called on at the time of final reclamation.

After the topsoil piles are constructed, they will be roughened to retain moisture and will be re-vegetated with an interim seed mix as per the approved reclamation plan (see section R645-301-212) All piles will have a berm constructed along the down-slope side to prevent loss of material. All pile will be adequately identified with signs to assure they are not inadvertently affected by the operations.

After the topsoil has been salvaged from the coal pad area and the drop zone area work can begin on constructing the coal pad extension. Some material from the existing coal storage pad will be graded into the new extension. This will result in a pad surface which is not quite as level as the one presently existing, but will be more gently sloping off to the east as it

transitions into the new pad area. Since there will be no reclaim draw-down ports under this part of the coal storage pad the fact that it slopes off somewhat will not present any operational difficulty. Additionally, some of the coal refuse material which is presently stored in the approved site on the west side of the facility may be hauled in to help build up the new coal storage pad. Use of this material is approved for such use under the currently approved plan, as described in Section R645-301-512-230, and has been done in the past. Analysis of this material shows that it is not toxic nor acid-forming (see Appendix O, Supplement). Potential sites of refuse fill are depicted on Plate 1A. (After the coal pad construction is completed a detailed survey of the refuse fill areas will be completed, and a new "as-built" map will be prepared of the fill areas and the main refuse pile so that a complete and accurate account of the total refuse volumes will be made.) A third source of material for constructing the new coal pad is from the native material existing at the location. This area is somewhat undulated, and by grading off the higher areas and filling in the lower areas the coal pad area can be graded into a fairly uniform surface suitable for storing and reclaiming the extended coal pile.

As mentioned previously the drop zone will be a least 150 wide and will extend the full length of the expanded coal pile storage area. The re-located access road (PR 5) will separate the drop zone from the extended coal pad. Topsoil will be removed from the drop zone prior to construction of the coal pad, and stored as described above. After the area is re-contoured, the entire drop zone will be gouged and roughened. The purpose of this roughening is two-fold. First, it will help hold moisture so that the area can be re-vegetated to help control erosion. Secondly, and more importantly, the roughened surface will help prevent the migration of coal fines away from the coal pile. It is expected that there will be wind-blown coal fine which drop into this area; indeed, this is the primary reason for constructing the drop zone in the first place. However, coal fines travel downwind and cross country by two methods; one is when the fines become airborne, usually from the drop point of the radial stacker, and the second is when coal fines already on the ground cascade or hop-scotch from point to point with succeeding wind storms. In this manner the fines migrate steadily downwind much as sand dunes move over time. Rainfall events also move the fines down-gradient (which at Wildcat is also down wind). By roughing and pocking the drop zone this method of ground-hopping migration from both wind and water is greatly reduced. The depressions serve as effective traps for

the coal fines, and will be covered over upon final reclamation. After the drop zone has been roughened it will be re-seeded with an interim seed mix. However, this area will be an active part of the operation and this re-seeding is not to be considered part of any short term or interim reclamation as such. At the lower (eastern) edge of the drop zone a perimeter ditch will be constructed. Any coal fines which make it across the drop zone will be contained by this ditch and will be directed to one of the three sediment ponds located below the disturbed area. An limited-access road will be provided along this ditch to allow for maintenance of the ditch. Other than the perimeter ditch and access road there will be no vehicular traffic, coal storage, or material storage within the drop zone during the remaining life of the operation.

Before any construction begins in this area temporary sediment control devices will be installed. These will consist of straw bales and/or silt fences installed in the three primary drainages leading westward away from the site. After the temporary sediment control measures are in place construction will begin on the three new sediment ponds. These ponds will be located in the three aforementioned drainages and will be located immediately adjacent to and west of the public road which flanks the eastern edge of the facility. The ponds will be so positioned so as to avoid the buried gas-line corridor which is located along the northwest side of this road. These ponds will be adequately sized to accommodate the runoff volume and sediment volume as determined by the Sedimentation and Drainage Control Plan (see Appendix R). However, Pond I will be over-constructed because excavated material from the pond (not including topsoil removal) will be used to backfill existing Pond D. It was determined (with concurrence form the Division) that Pond D should be eliminated since it is difficult to maintain given its present location next to the secondary coal storage area. All drainage control functions presently handled by Pond D will be handled by new Pond I and existing in the future. Material needed to backfill Pond D will be generated by over-excavation of Pond I (and/or from the existing refuse pile) . A construction road will be built between the two pond areas to facilitate this activity. After the pond construction/backfilling project is completed the road will be left in place to allow maintenance and cleaning of Pond I. Similarly, Pond G is oversized so that it too can serve as a borrow source for construction of the coal pad extension if needed. Pond H will be not be oversized since it is not contiguous with the pad construction area. Construction access to Pond H will be from the adjacent public road. Existing Pond E will also be enlarged slightly (by deepening) in order to

handle some of the runoff previously reporting to Pond D. Material excavated from the deepening Pond E will be used to help backfill Pond D. Additional information regarding the design specifications of all ponds can be found in Appendix R, Plate 2 and Plates 3C through 3F.

Within the area of the pond impoundments, topsoil will be salvaged to a depth of 24". This topsoil material will be used to construct the dams themselves. In this manner each newly constructed sediment pond dam becomes an isolated topsoil pile. This proposal was made with concurrence from Division staff. It has the advantage of keeping the topsoil stored in several smaller individual piles rather than in one large deep pile. Because the inside slope of the dam is also the slope of the topsoil pile, and since the lower part of this slope may eventually be contaminated by impounded runoff material, this inner surface will be covered with a protective cap layer (similar to the perimeter piles below the drop zone). This cap layer (see Plates 3D,3E and 3F) will be removed if necessary during final reclamation, and disposed of as coal mine waste according to the approved reclamation plan. Because the volume of topsoil salvaged at each of the pond sites is a function of the overall impoundment area (and the commitment to salvage 24") the dams for some of the ponds are larger than they would normally have to be. This reflects their dual nature as pond impoundments and topsoil storage piles. After construction, the out-slopes and the in-slopes above the high-water level will be gouged and roughened and re-seeded with an approved interim seed mix according to the existing approved reclamation plan. After the ponds are constructed, the perimeter ditches (D-10 leading into Pond I, and D-25 leading into Pond G) will be constructed (see Plate 2). Topsoil along these linear ditch structures will be scraped off (6" deep) and laid on the downslope side of the ditch in the form of a long low berm using a single-pass from a grader. Later, upon final reclamation this topsoil berm can be spread back over the adjacent reclaimed ditch line. (During operations, cleanout material from these ditches will be relocated on the up-slope side of the maintenance way opposite the ditch so that no cleanout material is placed on or over the topsoil berm.) With the sediment ponds and perimeter ditches in place, the entire operational area and construction area will be protected from sediment runoff by the new ponds. Only after the new ponds and perimeter ditches are in place and functioning will construction of the coal pad and drop zone begin.

Prior to construction of the expanded coal storage pad Sediment Ponds A and B will be removed. As part of phase 1, new

Pond G will have already been installed prior to removing Ponds A and B. Since Pond G collects drainage from the same areas as Ponds A and B there will be no loss of sediment control protection when Ponds A and B are eliminated. Once all of the new ponds (G, H and I) have been installed and certified Andalex will provide written notification to Utah Division of Water Quality designating the out fall of these ponds as new UPDES discharge points. These will actually be transferred discharge points from ponds A, B and D which will all be eliminated as part of the 2008 Modification Plan.

The existing vegetation reference area is located in the southeastern corner of the property. During Phase 2 construction, this area will be partially covered by the drop zone and will have to be relocated. Patrick Collins (Mt. Nebo Scientific) first studied the area surrounding the loadout and has determined a suitable site for a new vegetation reference area. The new reference area site is located south of the train loadout structure, bounded on either side by the railroad tracks and the Trestle Road (see Vegetation Map of the Wildcat Loadout). Because this site was been determined to be representative at that time, sampling to provide quantitative data was accomplished in July 2007. A final report for the results of this sampling has been provided in the MRP [see Vegetation Sampling Results: Sagebrush/Grass Reference Area at the Wildcat Loadout (2007), found in Appendix I, Supplement].

5) EQUIPMENT AND MATERIAL STORAGE AREA:

A material storage area is proposed for the area west of the train loadout tower and will occupy about 6 acres. This area is essentially flat and is contiguous with the existing operational area of the loadout facility (see Plate 1A). The area is immediately adjacent to the existing coal refuse storage pile and topsoil piles B and E. There will be no permanent structures or facilities on the site. The storage area may be constructed in stages on an as needed basis. Prior to constructing the storage pad topsoil will be salvaged from the site. Four soil test pits have been dug around the area and the soils evaluation was conducted by Priscilla Burton of the Division (see Appendix I, Supplement). Based on this survey it was determined that suitable topsoil resources exist to a depth of several feet. A minimum of 24" of topsoil will be salvaged from the area and will be stockpiled in a linear pile flanking the north side of the storage area along the base of the slope of the adjacent existing east-west trending escarpment. The pile will be approximately 600' long, 100' wide and 12'-15' high (see Plate 13B). After the

pile has been built and contoured it will be gouged and roughened to hold moisture and prevent erosion. The pile will then be re-seeded with an interim seed mix according to the approved reclamation plan. The out-slope of the pile will be bermed to prevent loss of material from erosion.

Prior to any surface disturbance a drainage ditch will be constructed around the perimeter of the site. This ditch will drain to existing Sediment Pond F. The existing undisturbed drainage ditch which presently runs through the area will be re-classified as a disturbed drainage ditch (U-38) and will be re-routed into Pond F. In order to accommodate the increased runoff and sediment volume from the new storage area and the undisturbed area, Pond F will have to be enlarged. (Refer to Appendix R and Plate 3C for details of the new pond sizing and drainage ditch configurations.) In order to allow access room for the new ditches to enter Pond F the southern end of existing topsoil pile B and E (combined) will have to be shaved off. This material will be pushed up to the top of the existing piles and will be used to partially fill the swale which is now present between the two piles. After the nose of the pile is re-configured for the ditches it will be roughened, re-seeded and bermed as before. A track-hoe and/or front-end loader will be used to re-shape the pile.

After the topsoil has been salvaged and stockpiled the area will be graded to create a smooth even site suitable for storing material and equipment. Since the area is already fairly uniform this should involve little more than making several passes with a grader. Access to the material storage area will be provided by re-aligning part of existing road PR-11 as shown on Plate 2. This extended road segment will be graveled upon completion.

6) TOPSOIL DEFICIT REMOVAL:

Presently there are four topsoil piles existing at Wildcat. However, because Wildcat was not originally permitted under SMCRA regulations the existing topsoil volume is not sufficient to reclaim the existing disturbed area to a depth of 6" as required under the approved reclamation plan. The 2008 Modification Plan provides an opportunity to help rectify this situation. As described above, two new areas are to be added to the Wildcat operational area; the expanded coal storage pad/drop zone and the material storage area. These areas are suitable areas to salvage additional topsoil. In addition, the new sediment ponds associated with the expanded facilities are also sites for additional topsoil salvage. By stripping excess topsoil from

these combined areas during this phase of construction Andalex should be able to secure sufficient topsoil, when combined with the existing topsoil storage, to adequately reclaim the entire disturbed area with 6" as required by the approved plan.

Figures 13A, 13B and 13C show the existing topsoil volumes, the projected volumes of new topsoil piles associated with the 2008 Modification Plan, and the salvage source areas. In summary, the present piles contain about 17,000 yds. The existing topsoil deficit is now about 32,000 yards. By committing to salvage 24" of topsoil material from these new construction areas an additional 50,000 yds should be generated. This would be sufficient to not only reclaim the newly disturbed areas but to reclaim the present disturbed area as well. After the 2008 Modification Plan is constructed, there should no longer be a topsoil deficit.

At this time Andalex proposes to leave the existing substitute topsoil commitment (R645-301-224) in place in the plan. After the 2008 Modification Plan has been constructed the new topsoil piles will be surveyed and mapped, and exact volumes established. Assuming the topsoil deficit has been erased, Andalex will (with concurrence from the Division) eliminate the substitute topsoil section from the MRP at that time.

7) DIVISION ORDER DO-04, WIND-BLOWN FINES (REVIEW):

The requirements of the Division Order will be met through the following measures:

1) Andalex will extend the permit boundary to the east (in the direction of the wind-blown fines) within the newly acquired BLM right-of-way. Within this expanded right-of-way and permit area Andalex will construct a series of new sediment ponds and perimeter ditches designed to contain and confine any future coal fines. This will ensure that there are no off-site impacts in the future.

2) Phase 1 construction will immediately remove the coal fines accumulated in the drainage area around and below Sediment Pond B. This is the area where most of the coal fines have accumulated over the years. A new larger Sediment Pond G-1 (to replace Pond B) will be constructed downstream in the same drainage, but far enough away to capture any coal fines that may accumulate in the future.

3) Under phase 1, the truck-haul portion of road PR-5, and

the ramp leading to the coal pad, will be reconstructed with a substantial gravel base and will be chemically stabilized to control fugitive dust.

4) Additional resource protection measures will be adopted at such time as phase 2 construction is implemented in the future, Under phase 2 construction (i.e., coal storage pad expansion), in-place topsoil presently affected by windblown fines will be salvaged and stockpiled farther away from the existing coal piles and stacker drop points. This involves removal of topsoil along a 150' wide swath located downwind from, and along the eastern perimeter of the existing primary coal storage area. Field studies have shown that most of the wind-blown fines accumulation over the past 25 years of operation are confined within the region of this swath.

4) This 150' swath will serve as a drop-zone for the possibility of future accumulations. Prior to salvaging and stockpiling topsoil within the drop-zone, excessive existing coal fines will first be removed by scraping with heavy equipment.

5) After topsoil has been removed from the drop-zone the area will be roughened and re-seeded. This roughening will serve to minimize the downwind trans-migration of coal fines through the process of "ground hopping".

6) The newly established topsoil piles (located fro 150' to 450' farther away from the existing stacker drop points) will be constructed with a 6" protective outer layer of additional suitable soil material, in the unlikely event that some coal fines still manage to make it to the new piles. The protective covering can be removed at time of final reclamation if it is determined that it has accumulated too many coal fines to be used as topsoil.

9) Andalex will establish a monitoring program to determine the extent of future wind blown fines, and evaluate the success of the implemented measures. Andalex will contract E.I.S Environmental Consultants (or other qualified environmental consultants) to conduct a post-construction survey to be used as a baseline. These field surveys will then be done prior to each permit renewal and will employ similar protocol as the original survey (see Appendix U). The consultants will generate a report describing their findings and this report will be provided to the Division.

APPENDIX T

BLM RIGHT-OF-WAY ENVIRONMENTAL ANALYSIS

BLM

U.S. Department of the Interior
Bureau of Land Management

Environmental Assessment UT-070-07-001
January 18, 2007

Wildcat Loadout Extension
UTU-48027

Location: ***T. 13 S., R. 09 E., Section 33: SE¼SW¼NE¼, E½SW¼, SE¼.***

Applicant/Address: **Andalex Resources, Inc., PO Box 902, Price, Utah 84501**

U.S. Department of the Interior
Bureau of Land Management
Price Field Office
125 South 600 West
Price, Utah 84501
Phone: (435) 636-3600
Fax: (435) 636-3657

FINDING OF NO SIGNIFICANT IMPACT
AND
DECISION RECORD
Wildcat Loadout Extension
EA UT-070-07-001
UTU-48027

Based on the analysis of potential environmental impacts contained in the attached environmental assessment, and considering the significance criteria in 40 CFR 1508.27, I have determined that the action will not have a significant effect on the human environment. An environmental impact statement is therefore not required.

Decision:
It is my decision to authorize an amendment to the right-of-way grant to Andalex Resources, Inc. for the Wildcat Loadout Extension as described in the Alternative A - Proposed Action of EA UT-070-07-001. The company applied for right-of-way acreage increase of 150 acres on Federal Land. The company proposes to construct, operate, maintain, and terminate an extension of the existing Wildcat coal storage and loadout facility to facilitate collection and disposal of coal fines downwind from the storage and loadout facilities. I have determined that granting this right-of-way is in the public interest.

Rationale for the Decision: The decision to authorize the right-of-way has been made in consideration of the environmental impacts of the proposed action, as well as cost concerns to the Applicant. The action is in conformance with the Price River Management Framework Plan, which allows rights-of-way authorizations on a case-by-case basis. It is also consistent with the Carbon County Plan.

The No Action Alternative (Alternative B) was not selected due to the fact that Utah Division of Oil, Gas and Mining has issued a letter to the company ordering that the coal fines downwind be further contained. The No Action Alternative would not allow the company to comply with this order therefore threaten further operations of the present facility.

This NEPA action was posted on the BLM website on November 8, 2006. No comments were received from the public.

Roger L Bankert
Authorized Officer (signature)

1/29/07
Date of signature

Wildcat Loadout Expansion Project
EA No. UT-070-2007-01

1.0 PURPOSE & NEED

1.1 Introduction:

This Environmental Assessment (EA) has been prepared to analyze Andalex Resources, Inc. (ARI) Wildcat Loadout Expansion Project. The EA is a site-specific analysis of potential impacts that could result with the implementation of a Proposed Action (PA) or alternatives to the PA. The EA assists the Bureau of Land Management (BLM) in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI).

1.2 Background:

ARI on behalf of Wildcat Loadout has filed a Notice of Intent (NOI) to acquire a Right-of-Way (ROW) for an additional 150 acres, in Carbon County, Utah. This ROW would be implemented in accordance with BLM Regulations and State of Utah. The proposed area covers federal land. ARI proposes to expand their ROW area and construct two drainage ditches that would flow into a central sediment pond for coal fine containment. Plate 1 shows the General Location. Plate 2 is the proposed location relative to the existing loadout boundary and US Highway (HWY) 191/6.

1.3 Need for the Proposed Action:

ARI needs to contain the coal fines within the project area. The area is currently permitted through the Utah Division of Oil, Gas and Mining and the BLM. The boundary would be modified to include the additional area to the south and east. Wind carried coal fines have lightly covered this area over the past 22 year history of Wildcat. Therefore, it is necessary to include this additional 150 acres as part of ARI's ROW area. It should be noted that this additional acreage would not be fully developed. ARI would possibly relinquish a portion of the ROW not required for development. It is also important to note that ConocoPhillips Company utilized part of the area as a coal bed methane well pad which has since been reclaimed.

1.4 Purpose of the Proposed Action:

Private production and transportation from federal coal leases is an integral part of BLM's coal leasing program under authority of the Mineral Leasing Act of 1920 as amended by Federal Land Policy and Management Act of 1976. The BLM Coal Leasing program encourages development of coal leases and the reduction of the United States dependence on foreign energy sources. BLM will consider approval of the proposed project in a manner that avoids or reduces impacts on other resources and activities as identified in the Price River Management Framework Plan (MFP).

1.5 Conformance with BLM Land Use Plan(s):

The PA is in conformance with the objectives of the MFP. Table 1.1 lists the pertinent objectives of the MFP that the PA is covered by and in conformance with.

TABLE 1.1 - PA Conformance with the Objectives of the MFP

Resource		Objective
Cultural	C-1	Protection and Promotion of Cultural Resource Values
Lands	L-2	Right-of-Ways and Land Use Permits
Range Management	RM-1	Allocation and Production of Grazing Lands
Recreation	R-1	Preservation and Protection of Visual Resources
	R-3	Value of Paleontological Resources – Negative Determination based on lack of suitable geologic layers.
	R-8	Maintenance of Undeveloped Recreation Resources
Watershed	W-2	Protection of Watersheds
	W-3	Protection and Enhancement of Water Quality
Wildlife	WL-1	Management of Mule Deer Habitat
	WL-8	Management of Raptor Habitat
	WL-9	Management of Non-Game Species Habitat
	WL-10	Special Management of Threatened, Endangered or Sensitive Species

1.6 Relationship to Statutes, Regulations, or Other Plans:

The area of the PA is located upon federal lands administered by the BLM Price Field Office (PFO). Various federal, state, local and private statutes, permits and easements will be required for actions associated with the proposed development.

The granting of the ROW by the BLM is pursuant to the requirements of Title 5 of the FLPMA, and regulations found within Title 43 of the Code of Federal Regulations (CFR),

part 2800. These requirements will cover all actions proposed that are off the coal lease area with the exception of portions of the existing road that may be considered a county road.

The ROW is directly tied to the processing of coal subject to coal leases and would be administered under both FLPMA and the requirements of the Mineral Leasing Act of 1920 (MLA), and regulations found within Title 30 of the CFR (U.S.C. 181-287). The proposed project is under the sole jurisdiction of the BLM, as it relates to Federal lands.
The area of the PA is zoned as MG-1, mining and grazing, by the Carbon County Zoning and Planning Office, and is consistent with the existing land use plan for the county.

TABLE 1.2 is a summary of the permits and approvals from federal, state and local agencies that ARI would need to obtain for the project.

TABLE 1.2 - Approval Summary: Federal, State And Local Agencies

Agency	Act or Regulation	Requirement
Federal		
Council for Environmental Quality	National Environmental Policy Act of 1969 (NEPA) as amended (40 CFR 1500) Public Law 91-90, 42 USC 4321	EA
Bureau of Land Management	Federal Land Policy Act of 1976 (FLPMA) (43 CFR 2800 & 3100) Public Law 94-579	ROW, NOP, TUP & Consultation
	Mineral Lease Act of 1920 Title 30; USC 181-287)	Mining Plan Approval
Fish & Wildlife Service	Endangered Species Act of 1973 (ESA) (16 USCC 1539)	Provide biological opinion of wildlife and plants that are federally listed & impacts of the PA to listed species.
	Migratory Bird Treaty Act (16 USC 703-711)	Consultation and review of impacts to listed species.
	Bald Eagle Protection Act (USC 663a)	Consultation and review of impacts to golden eagles.
State of Utah		
Department of Community & Economic Development		
Utah State Historical Society	National Historic Preservation Act (CFR 800, Sec. 106)	Consider NRHP eligibility and mitigation of cultural resources
Department of Environmental Quality		
Division of Air Quality	Permit to Affect Quality	Permit in place
Division of Water Quality	Construction And Operational Permits	Modification to UPDES & Storm Water Discharge Permits
Department of Natural Resources		
Division of Oil, Gas &	Permit for Mine and Reclamation	Mine plan amendment, approval and

Mining	(R645-301)	operation.
Carbon County	Site development permits and County Zoning Ordinances	Determine compliance with existing land use designation.

1.7 Project Initiation, Public Participation and Issues Identified for Analysis:

Project initiation was started with a request for ROW with the BLM PFO in September 17, 2006. Shortly after first applying for the ROW, the company asked the BLM to postpone the processing of the ROW until further notice. In August of 2006 the company informed the BLM to continue processing. Agency scoping was initiated on September 27, 2006. Through agency scoping all critical elements of the human environment and other resource concerns were considered and an Interdisciplinary Team Analysis Record Checklist (ITARC) was created (APPENDIX A). Agencies consulted are listed in CHAPTER 5.0. All resources considered to be not present in the project area or present in the project area but not impacted by the proposed project will not be discussed within this EA. However, rationale for these conclusions are indicated in APPENDIX A.

Public notice of the proposed project and preparation of the EA was posted on the BLM's Electronic Notification Bulletin Board on November 8, 2006.

Based on public and agency scoping, the following issues were determined to be relevant:

1.7.1 Soils.

1. Disturbance and or compaction of soil up to 2.34 acres.

1.7.2 Vegetation.

1. Loss of up to 2.34 acres of forage production.

1.7.3 Threatened, Endangered and Sensitive Species.

1. Potential loss of suitable habitat.

2. Potential loss of representative TE&S individual plant species.

1.7.4 Cultural and Historic Preservation.

1. Potential disturbance to cultural sites.

1.7.5 Wildlife.

1. Approximately 2.34 acres of disturbance on crucial winter range use area by deer.

1.7.6 Land Use and Grazing

1. Loss of forage production on 2.34 acres.

1.8 Summary:

This CHAPTER has presented the Purpose and Need the proposed project, as well as the relevant issues, i.e., those elements that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposed project in a way that resolves the issues, the BLM would normally develop a range of action alternatives. In this case only the PA and a No Action Alternative are analyzed. This alternative, as well as a no action alternative, is presented in CHAPTER 2.0. The potential environmental impacts or consequences resulting from the implementation of each alternative are then analyzed in CHAPTER 4.0 for each of the identified issues.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction:

This chapter describes the alternatives developed in response to the issues and concerns addressed in Chapter 1.0 and as identified within the scoping process

2.2 Alternatives Considered in Detail:

2.2.1 Alternative A – Proposed Action.

Andalex Resources, Inc. (ARI) currently maintains a ROW (U-48027) for the Wildcat Loadout (Loadout) on 100.350 acres of land utilized as a coal preparation and loading facility for a number of mines located within the area. Of the 100.350 acres, approximately 12.5 acres are under lease to Utah Railway (U-52065) by the BLM). The Loadout site is permitted under Utah Division of Oil Gas and Mining (UDOGM). The facility has three truck dumps, a unit train loading track, and numerous conveyor belts, as well as numerous structures to facilitate the reclaim, crushing, storage and loadout of coal.

The Loadout facility is located on federal land in Carbon County, Utah (Plate 1). The current ROW is not large enough to facilitate total coal fine containment (primarily airborne dust from the coal piles). ARI needs to expand their facility site to create two new drainage ditches that would run into a new sediment pond for coal fine containment. The area is located in Section (Sec.) 33, Township (T.) 13 South (S.), Range (R.) 9 East (E.) of the Salt Lake Base and Meridian (SLB&M) (Plate 1). The Wildcat Loadout Expansion Project would necessitate expanding the ROW to include the E½SW¼ and the entire SE ¼ of Sec. 33, approximately 98 acres.

In the event the pond required decanting, a gas powered pump would be utilized. The pond would act as a retention basin to capture surface deposits of coal fines that currently could enter the existing drainages. The coal fines would be removed periodically or when the material reaches 60 percent of designed capacity. The fines would be hauled to an approved UDOGM refuse disposal site. The existing natural drainages serve as an undisturbed bypass to allow runoff from adjacent undisturbed land to bypass the pond.

It is important to note that a portion of the area is a recently reclaimed well pad location leased by ConocoPhillips Company. Roads within the project area would require no upgrading. No new fencing or culverts would be installed.

Construction of Storm Drainage – The Proposed Project would create two drainage ditches located inside of the 2 large natural washes (Plate 2). These drainage ditches would be approximately 36 inches deep with a 2:1 side slope (approximately 20 feet in width)(Figure 1). The southern most ditch would be approximately 1,930 feet (0.88 acres) in length and the northern most ditch would be approximately 2,067 feet (0.94 acres) in length. Construction of the ditches would require the utilization of a conventional trackhoe and road grader for a period of three to five days.

The two drainage ditches would meet at a central sediment pond. The approximate size of the pond would be 150 feet by 150 feet (0.52 acres) with an embankment approximately 10 feet in width and 11 feet in height. The pond may necessitate the use of a D-6 class crawler tractor. The pond is designed to contain all runoff from the lands encompassed by the existing natural drainages (Figure 2). The pond would be constructed in the lowest quadrant of the ROW area whereby most loadout site disturbed area drainage would drain into the pond. The capacity of the pond would be well in excess of the 10-year, 24-hour precipitation event requirement.

One advantage of the pond is its proposed location adjacent to the roadway. This would greatly simplify sediment monitoring and cleanout. The culverted primary spillway would be constructed with an oil skimmer and built to pass the 10-year, 24-hour storm event. The emergency spillway would be lined with concrete or grouted rip-rap and have a bottom width of two feet; a freeboard depth of two feet and 2:1 side slopes and capable of handling a 25-year, 24-hour storm event. Riprap would be installed at the outlet of the open channel spillways to protect the earthen structures from erosional forces.

Topsoil Removal, Salvage and Stockpiling – Available soil over the area ranges from about 6 to 8 inches, of which an average soil layer of about 8 inches thick would be removed and stockpiled as topsoil. The upper 6 to 12 inches is the most suitable soil, however, the subsoils over much of the area support root growth to depths of about 48 inches. Topsoil would be salvaged with backhoes, trackhoes and/or front-end loaders and hauled by dump trucks to the designated topsoil storage area within the disturbed area. As much as 2,129 cubic yards of topsoil could be salvaged.

The topsoil storage area is proposed in the southeast corner of the facilities site near the sediment pond. The stockpile would be protected from erosion and sediment production by roughening the surface, revegetation, berms and silt fences. Subsoil materials would be used over the area for facilities site development and then retrieved for soil reconstruction during reclamation.

Stabilization, Maintenance and Operation Plan – Construction procedures would be consistent with those described within the Utah Nonpoint Source Best Management Plan for Hydrologic Modification. Where runoff and drainage controls would be required, they would be constructed to BLM standards. The hydrologic regime would be protected by the installation and implementation of protection measures at all proposed drainage modifications.

Maintenance would include the periodic cleaning of the pond and drainage control ditches in order to maintain their function. Clean out material would be disposed of off-site in an approved solid waste disposal facility, such as East Carbon Development Corporation (approximately 30 miles southwest of the surface facility). A Spill Prevention Control and Countermeasure Plan (SPCC Plan) has been developed to protect the undisturbed drainages from accidental spills of oil or other petroleum products within the disturbed area. This plan would be available for review at the loadout site.

In the event of spills of petroleum-based products during the construction of the PA, procedures outlined in the SPCC Plan would be followed. The BLM, as well as the Utah Department of Environmental Quality, would be notified if the release meets the definition of a hazardous waste as defined in 40 CFR 261.

To maintain the cultural, historical and paleontological resource integrity of the area, construction crews and staff would be provided with instructional materials regarding the identification, value, legal protection and treatment of these resources. If any cultural, archeological or paleontological resources are discovered during construction or any operations associated with the railroad, conveyor or surface loadout facilities, all activities would cease at the area of the manifestation. The authorized agency would then be contacted to evaluate the importance and potential of the site. Mitigation measures would, at that time, be made for the value of the resource site. Construction and/or maintenance crews would avoid the site until the resource potential has been determined.

Potential measures to help improve air quality for construction activities include proper maintenance of the construction equipment and limited travel on the construction ROW and dirt access roads. Dust generation from disturbed areas would be reduced through interim watering of active construction areas. An enzyme armor coating on the access road would minimize dust generated by traffic during construction or eliminating it all together. Final

reclamation, which included revegetation of all disturbed areas, would eliminate further impacts.

Vegetation removal necessitated by the PA would be confined to the ROW. Vegetation removed would be set-aside during construction activities, and/or left in place upon completion of construction where possible. Reclamation would be completed as stated in the Wildcat M&RP.

Prior to construction and operation of the PA, an awareness and appreciation of wildlife would be taught to all employees associated with the project. All activities associated with the PA development would be coordinated to avoid optimal habitat use periods and areas for all wildlife species. The May 2006 raptor survey conducted by the Utah Division of Wildlife Resources did not find any active nests within 0.5 mile of the proposed project area. However, if active/occupied raptor nests are located within 0.5 mile of any portion of the project area, construction would not begin within that area during the period of February 1 to July 15.

Abandonment and Reclamation The existing Wildcat Loadout Facility would be reclaimed according to the M&RP.

2.2.2 Alternative B – No Action.

Under the No Action Alternative, the ROW would not be issued and ARI would continue to periodically clean-up coal fines with a vacuuming system (Wildcat M&RP, UMC 784.11 Section 5.2). In addition, the potential for coal fines to be washed into the two natural drainages would continue.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction:

This CHAPTER presents the potentially affected existing environment (i.e., the physical, biological, and socioeconomic values and resources) of the impact area as identified in the Interdisciplinary Team Analysis Record Checklist (ITARC) (APPENDIX A) and presented in CHAPTER 1.0 of this assessment. This CHAPTER provides the baseline for comparison of impacts/consequences described in CHAPTER 4.0.

In order to analyze potential impacts, both positive and negative, an understanding of what currently exists at the location is essential. Only those resources, which could be affected, will be discussed. The balance of the resources within the area are itemized in APPENDIX A and dismissed from analysis.

3.2 General Setting:

Elevations in the area of the PA ranges from 6,000 feet to 6,300 feet above sea level and is characterized by hot, dry summers and cold, moist winters. Most of the available water results from winter snow accumulation. Summer precipitation comes from short duration thunderstorms, which often result in flooding and erosion (Lines et al, 1984). Characteristic vegetation includes scattered pinyon-juniper over most of the bench area intermixed with shrubs and grasses. The general area is predominantly a disturbed setting, with several dirt roads and routes constructed for grazing and mineral exploration activities meandering through the area and numerous coal bed methane well pads located within the surrounding area.

The Wildcat Loadout facility is located within the Gordon Creek area of the Wasatch Plateau, which is one of the major physiographic features in the region. The plateau rises from a base at approximately 6,000 feet in elevation to over 9,000 feet. The project area is characteristic of the mid-elevations of the province, consisting of deep rugged washes and open plateaus. The permit area sits on the Masuk Member of the Mancos Shale. The Mancos Shale in this area is in excess of 5,000 feet thickness. The Mancos Shale in the area is mainly dark bluish, gray shale, which becomes sandy towards the top (Wildcat PAP). The oldest unit of the Mesa Verde Group is the Starpoint Sandstone. It lacks coal and consists of three sandstone tongues. The beds of sandstone range in thickness from one to ten feet in most parts. The Mesa Verde Group immediately overlies the Mancos Shale. Beds are mostly uniform and are inclined from three to eight degrees away from the uplift. The strike of the beds is generally parallel to the face of the cliff. Members of the Price River Formation and Upper Cretaceous Blackhawk Formation are evident in the area. The Castlegate Sandstone is approximately 450 feet thick in this area.

3.3 Resources/Issues Brought Forward for Analysis Including Critical Elements of the Human Environment:

3.3.1 Soils.

Soils in the project area have been mapped at the order 3 intensity level by the Soil Conservation Service, (now the Natural Resource Conservation Service, NRCCS), as part of the Soil Survey of the Carbon Area, Utah, 1988. This soil survey is presently in a published soil survey meeting national quality standards. An Order 1 soil survey was completed at the Wildcat Loadout facility site in 1988. The detailed soil survey report is contained within the M&RP, which includes the entire existing area. The soil map units identified are those as described by NRCS as of June 2002. Soil map units identified by the NRCS that are within the project area are listed below:

48 **Haverdad Loam**, Fine-loamy, mixed, superactive, calcareous, mesic Ustic Torrifluvents.

52 **Hernandez Family**, Fine-loamy, mixed, superactive, mesic Ustic Haplocalcids.

120 **Travessilla-** Loamy, mixed, superactive, calcareous, mesic Lithic Ustic Torriorthents.

Haverdad Loam. The Haverdad series consists of very deep, well-drained soils formed in stratified alluvium on flood plains and low terraces. Elevations range from 3,500 to 6,500 feet. Permeability is moderate. Slopes range from 0 to 6 percent. The mean annual precipitation is approximately 11 inches, and the mean annual temperature is approximately 45 degrees F. Parent material is alluvium from mixed sources. Well drained; slow runoff; moderate permeability. Flooding for brief periods occurs during spring runoff and after thundershowers.

A--0 to 4 inches; pale brown (10YR 6/3) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; many fine roots throughout; carbonates are disseminated throughout; slightly effervescent; moderately alkaline (pH 8.0); gradual smooth boundary. (2 to 8 inches thick)

C1--4 to 14 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots throughout; carbonates are disseminated throughout; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

C2--14 to 30 inches; pale brown (10YR 6/3) loam, stratified with fine sandy loam, sand loam, clay loam, and silt loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots throughout; carbonates are disseminated throughout; slightly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary.

C3--30 to 60 inches; pale brown (10YR 6/3) clay loam, stratified with fine sandy loam, loam, silt loam, and silty clay loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots throughout; carbonates are disseminated throughout; slightly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary.

Hernandez Family. Hernandez soils are on upland fans and ridges and have slopes of 0 to 5 percent. Elevations range from 7,000 to 8,000 feet. The soils formed in moderately fine textured alluvium. The mean annual precipitation is about 11 to 13 inches of which approximately 8 inches falls during the period from May through October as intense thunderstorms. The remainder occurs mainly as snow during the period November through April. The mean annual temperature is about 46 degrees to 48 degrees F. The frost-free season is 125 to 135 days. Well-drained; medium to slow runoff; moderate permeability.

A--0 to 4 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; common very fine and fine tubular pores; moderately calcareous; slightly alkaline (pH 7.8); clear smooth boundary. (1 to 5 inches thick)

Bw--4 to 14 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine roots;

common very fine and fine tubular pores; moderately calcareous; slightly alkaline (pH 7.8); clear smooth boundary. (6 to 14 inches thick)

Ck1--14 to 45 inches; pink (7.5YR 8/4) clay loam, light brown (7.5YR 6/4) moist; massive; hard, very friable, slightly sticky and slightly plastic; common fine roots; common very fine and fine tubular pores; strongly calcareous, with disseminated lime; moderately alkaline (pH 8.2); gradual smooth boundary. (20 to 40 inches thick)

Ck2--45 to 60 inches; pink (7.5YR 7/4) clay loam, brown (7.5YR 5/4) moist; massive; hard, very friable, slightly sticky and slightly plastic; common very fine tubular pores; strongly calcareous, with disseminated lime; moderately alkaline (pH 8.2).

Travessilla. The Travessilla series consists of very shallow and shallow, well drained soils that formed in calcareous eolian sediments and material weathered from sandstone. These soils are on hills, cuestas, scarps, and mesas with slopes ranging from 0 to 75 percent. Mean annual precipitation is approximately 11 inches. The mean annual temperature is above 53 degrees F. Typically, moist intermittently from April 30 through October in some part of the soil moisture control section and dry in all parts periodically from November 1 to April 30. Well drained; runoff is high on slopes less than 1 percent and very high on slopes greater than 1 percent; moderate or moderately rapid permeability.

A--0 to 4 inches; light brownish gray (10YR 6/2) stony sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; common fine pores; 15 percent stones; slightly effervescent; slightly alkaline; clear smooth boundary. (2 to 6 inches thick)

C--4 to 8 inches; pale brown (10YR 6/3) channery loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common fine pores; 20 percent channers; slightly effervescent; moderately alkaline; abrupt smooth boundary. (2 to 14 inches thick)

R--8 inches; hard sandstone with some fractures.

3.3.2 Vegetation.

The proposed project area contains plant communities common to this area of Utah. The area is predominately covered by big sagebrush (*Artemisia tridentata wyomingensis*), Indian ricegrass (*Achnatherum hymenoides*), Utah juniper (*Juniperous utahensis*) and Pinyon pine (*Pinus edulis*). Other species located within the project area include galleta (*Hilaria jamesii*), winterfat (*Eurotia lanata*), pricklypear cactus (*Opuntia sp.*), needle and thread grass (*Hesperostipa comata*), Salina wildrye (*Leymus salinus*), halogeton (*Halogeton glomeratus*) and Russian Thistle (*Salsola tragus l.*). Halogeton and Russian thistle mainly cover the reclaimed well pad and road area (approximately 1.25 acres).

Areas of pinyon pine and Utah juniper are scattered throughout but become much smaller as the route enters the area dominated by sagebrush and grass.

3.3.3 Threatened, Endangered and Sensitive Species.

The area has potential habitat and suitability criteria for two flora species- Creutzfeldt cryptantha (*Cryptantha creutzfeldtii*) and Uinta Basin hookless cactus (*Sclerocactus glaucus*); three avian species- Northern Goshawk (*Accipiter gentiles*), greater sage-grouse (*Centrocercus urophasianus*) and burrowing owl (*Athene cunicularia*); three mammal species- kit fox (*Vulpes*

Macrotis), White-tailed prairie-dog (*Cynomys leucurus*), and black-footed ferret (*Mustela nigripes*); no reptiles, fish and/or amphibians of special interest would occur within the project area. There is suitable habitat for both neo-tropical and migratory birds.

In accordance with the United States Fish and Wildlife Service's (USFWS) protocols an inventory for the habitat suitability presence of threatened, endangered and candidate fauna and floral species was conducted on September 27, 2006 (APPENDIX B, Habitat Delineation).

3.3.4 Cultural and Historic Preservation.

The culture history for the current project area is an extension of that described for the Price Coalbed Methane Gas project in the Final Environmental Impact Statement (BLM 1997a) That document describes the 12,000-year culture History for the entire field. That document is supplemented by the Cultural Resource Management Plan, which provides guidance for evaluation and treatment of cultural resources discovered during intensive cultural resource inventories in the areas of potential effect from the proposed undertaking (Späth 1999). The CRMP has been formalized in a Programmatic Agreement (BLM 1997b).

SENCO-PHENIX conducted an extensive file search at the BLM Field Office in Price, Utah and also consulted the early GLO maps (1930) and the early U.S.G.S. map (1916). SENCO-PHENIX then surveyed ca. 55 acres within the project area. The remaining 43 acres has been covered by previous archeological surveys (Senulis 2000, 2001; Mrstik and Montgomery 2005). No new cultural resources were discovered by the current survey (Senulis 2006).

Archeological sites or districts are eligible for the NRHP under the following criterion:

Criterion A: Event. This refers to a specific event such as the founding of a town or a series of events such as the development of a lifestyle. (NPS: Bulletin #15:11-13) The Utah Railway (42CB1258) built in 1912 to 1914 is eligible under this criterion for its significance to the economic development of the Price Basin. The Utah railway is west of the current project area and will not be impacted by this project.

Criterion B: Person. This criterion applies to individuals who can be determined to be significant in our past. (NPS: Bulletin #15:14-16) There are no sites near the project area that meet this criterion.

Criterion C: Design/Construction. This criterion applies to properties "significant for their physical design." (NPS: Bulletin #15:17-20) There are no sites near the project area that meet this criterion.

Criterion D: Information Potential. This criterion has two requirements, which must both be met for a property to be eligible. The property must have information to contribute to our understanding of human history or prehistory. This information must also be considered important. (NPS: Bulletin #15:21-24) There are no sites near the project area that meet this criterion.

3.3.5 Wildlife.

Wildlife indigenous to the general area of the project includes amphibians, reptiles, birds and mammals. The area is located east of the Wasatch Plateau, a region that supports approximately 360 vertebrate wildlife species. The abundance and distribution of wildlife in the proposed project area is directly related to the present land use and capabilities. The vegetation in this area provides crucial winter range for mule deer and greater sage grouse.

Reptiles & Amphibians The most prominent species of reptiles include the rattlesnake and various lizard species. The pinyon/juniper and sagebrush/grass areas that make up most of the affected habitat are not considered important or limiting to their survival. No aquatic fauna are present within the area; therefore, reptiles and amphibians will not be discussed further.

Fish. There are no permanent bodies of water or perennial streams within the area, therefore no fish species would be affected.

Raptors. A variety of raptors occupy the surrounding area, however all of the located nest sites are more than 0.5 mile from the proposed project area. The May 2006 raptor survey conducted by UDWR did not reveal any active or tended nest sites within a 1-mile buffer of the proposed project site (Plate 3).

The proposed project is located within crucial winter and brooding range for greater sage grouse. This species is usually inhibits the sagebrush flats at the foot of the cliffs.

Mammals. The main game species include mule deer, mountain lion, blackbear and elk.

Mule Deer. Mule deer habitats within the affected area is considered crucial winter range. Mule deer population densities within this herd unit are well below management objectives.

Mountain Lion. Mountain lion area present but their movement generally coincides with the migration of deer. This species will not be discussed further.

Black Bear. Black bear may occasionally be found in the vegetated canyons, usually along the cliff faces. This species will not be discussed further.

Elk. The project area is not within the limits of elk range. Therefore, this species will not be discussed further.

3.3.6 Land Use and Grazing.

One grazing allotment occurs within the vicinity of the project area. The existing gas field access road and proposed Wildcat Loadout Expansion Project would occur within the Consumers Wash Allotment. The current permittees are Pete and Steve Stamatakis. The season of use is during the winter and spring from October 1 to June 20 with 874 head of sheep currently using 434 animal unit months (AUM's).

4.0 ENVIRONMENTAL IMPACTS

4.1 Introduction:

This CHAPTER describes the possible impacts to the resources as a direct/indirect result of the change agents associated with the alternatives developed in response to the issues and concerns addressed in CHAPTERS 1.0 and 3.0 and as identified within the scoping process.

4.2 Direct/Indirect Impacts:

Direct Effects: Effects caused by the action and occur at the same time and place.

Indirect Effects: Effects caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Cumulative Impacts: The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

4.2.1 Alternative A – Proposed Action.

TABLE 4.1 shows how activities associated with the proposed project (construction and operation of the proposed project for the loadout surface facility on federal lands affect the resources described in Chapter 3 and as identified during the scoping process.

TABLE 4.1 - Areas of Impact Associated With the PA

Category	Area (acres)	Remarks
Soils	2.34	Construction & Operational Disturbance
Vegetation	2.34	Construction & Operational Disturbance
TES Species	2.34	Construction & Operational Disturbance
Cultural & Historic Preservation	2.34	Construction & Operational Disturbance
Wildlife	2.34	Direct Construction & Operational Mule Deer Habitat Disturbance

	2.34	Direct Construction & Operational Raptor Foraging Habitat Disturbance
Land Use & Grazing	2.34	Direct Construction & Operational Grazing Habitat Disturbance

4.2.1.1 Soils. The combined construction impact to soil resources from the proposed project would be 2.34 acres. This includes the entire proposed disturbance associated with the drainage ditches and sediment pond. In association with the pond and drainage construction the removal of vegetative cover would result in an increased susceptibility to soil erosion throughout the disturbed sites.

A temporary impact to soil could occur within the ROW where construction vehicles would compact topsoil layers by gaining access within the ROW for construction activities. A temporary loss in soil productivity could occur on the sites during the life of the loadout facility. Upon reclamation, the area would be returned to approximate natural conditions, with soil functioning being a major consideration. Within the proposed project ROW, surface disturbance to soil resources at specific structure sites would be minimal (2.34 acres).

4.2.1.2 Vegetation. As previously discussed, the area of the proposed project could compromise as much as 2.34 acres. Vegetation and habitats impacted are not limited, nor specific to the project area. Therefore, the acreage of impact would not affect the health of the local community structure.

Impacts to vegetation populations would be minimal and limited to activities associated with construction of the drainage ditches and sediment pond. Disturbance to recently reclaimed areas would be temporary, from 24 to 36 months and/or until vegetation becomes fully established. No long-term impact to vegetation resources is expected from the proposed project.

TABLE 4.2 - Habitat Disturbance Associated with the PA

Area	Construction (Acres)	Operation (Acres)
Northern Drainage Ditch	0.94	0.94
Southern Drainage Ditch	0.88	0.88
Sediment Pond	0.52	0.52
Total Acreage:	**2.34**	**2.34**

4.2.1.3 Threatened, Endangered and Sensitive Species. Impacts directly associated with the proposed project, due to the limited disturbance, would be minimal and limited to activities associated with construction of the drainage ditches and sediment pond. A TES habitat delineation of the area of potential disturbance did not reveal the presence of any TES species. Suitable habitat was found to be present for two flora species- Creutzfeldt

cryptantha and Uinta Basin hookless cactus; three avian species- Northern Goshawk, greater sage-grouse and burrowing owl; three mammal species- kit fox, White-tailed prairie-dog, and black-footed ferret; no reptiles, fish and/or amphibians of special interest would occur within the project area. There is suitable habitat for both neo-tropical and migratory birds. However, this same habitat is abundant throughout the region and is not a limiting factor to the spread or propagation of these species. No suitable Mexican spotted owl habitat is located within 0.5 miles of the PA.

4.2.1.4 Cultural and Historic Preservation. The FEIS (BLM 1999, supplemented by the Cultural Resource Management Plan (Späth 1999), provides guidance for evaluation and treatment of cultural resources discovered during intensive cultural resource inventories in the areas of potential effect from the proposed undertaking. The preferred option for managing cultural resources is avoidance of the resource (Späth 1999:17).

The Utah Railway (42CB1258) built in 1912 to 1914 is eligible for the NRHP under criterion (a) event, for its significance to the economic development of the Price Basin. The Utah railway is west of the current project area and will not be impacted by this project.

Because of the above, a finding of no effect to historic properties is appropriate and archeological clearance is recommended.

4.2.1.5 Wildlife. The primary concerns relative to wildlife within the area of the PA are:

1. Direct impacts, which include surface disturbance resulting in the loss of habitat, key habitat components and/or direct mortality to wildlife.
2. Indirect impacts which result is loss of habitat suitability resulting from intrusion of human presence and activity within sensitive wildlife habitats.

Direct impacts of the proposed project include surface disturbance required for drainage ditch and sediment pond installation and direct mortality associated with subsequent traffic. Indirect impacts of the proposed project include human related intrusions/disturbances into wildlife habitats, which can cause loss of habitat suitability. Human related intrusions/disturbances include human presence, equipment operation and construction activity. These intrusions can in turn result in reductions in use of habitat by wildlife and changes in distribution and movement patterns by wildlife. Loss of habitat suitability becomes particularly important when it affects habitats of species known to be sensitive to such intrusions or occurs during critical periods of the year when wildlife are more vulnerable to these adverse impacts (i.e., critical range, nesting).

Raptors. Direct operational surface disturbance would affect approximately 2.34 acres of raptor foraging habitat. This loss in itself is not expected to adversely effect raptors. Raptors are known to be sensitive to human intrusion during the nesting cycle. Disturbances during this period of time can cause birds to abandon their nesting territories or disrupt

adults tending the young in the nest resulting in mortality of young in the nest. However, the 2006 spring inventory did not identify active and/or tended raptor nests within a mile of the proposed site.

Mule Deer. Direct surface disturbance associated with operation of the PA would affect approximately 2.34 acres of mule deer crucial winter range. Mule deer crucial winter range supports relatively large population densities, however, the small loss of habitat (2.34 acres) is not expected to have any noticeable effect on numbers or distribution patterns for this species. Distribution of mule deer on these winter ranges could be affected, particularly in years with heavy snow conditions and during the early and late winter periods when snow is absent. Mule deer are vulnerable to disturbances of human activity when concentrated on winter ranges and animal physical conditions are depleted. Indirect impacts of the proposed project should have little effect on mule deer.

4.2.1.6 Land Use and Grazing. Livestock would be allowed on the allotment described. Upon operation activities, livestock would be precluded during the life of the project on 0.52 acres associated with the proposed sediment pond. New fencing would be installed as a result of the proposed project and a slight reduction of current AUM numbers are anticipated.

The Consumers Road is fenced along the south side, which creates two pastures. The north side is a winter grazing pasture and the south side is a spring grazing pasture. The allotment is grazed with sheep, at present. Steve Stamatakis has made application to change grazing in the south pasture to cattle use. (Jensen, 2006)

Mapping in 1993, in the south pasture show that the prevailing winds have blown coal dust from the loadout facility in a southeasterly direction. Also, coal dust has been deposited along the Consumers road from the coal haul transport trucks associated with the loadout. The coal dust had affected vegetation on 60 acres of public land at that time. The coal dust affects the microclimate of the soil. The covering of the black coal particles results in increased soil temperatures and causing increased evaporation of moisture resulting in drier soil conditions. There has been a significant change in the vegetation on the site. Sagebrush has been reduced and Winterfat has increased. Cool season grasses have reduced and mid to warm season grasses have increased. This has resulted in a reduction in the critical winter habitat for mule deer on the affected acreage.

As part of the original coal loadout lease agreement, Andalex completed an off-site vegetation mitigation project on other public lands. The project consisted of interseeding high value browse plants into the existing plant community on 50 acres at two different locations. One site was just west of the Consumers loadout facility and the other was on Porphyry Bench, south of Gordon Creek. The sites had

previously been chained and then seeded with grasses, specifically for spring livestock grazing.

The interseeding was designed to increase plant diversity and production of high value browse species on the lower elevation winter deer and elk range. Studies initially showed an increase in browse diversity from one to four different species and density increased from 600 to 3,500 plants per acre. These mitigation sites have been heavily grazed by wildlife. Grasses have continued to dominate these sites. Present density of the browse plantings is not known, however they have continued to receive heavy grazing pressure.

On April 14, 2005, BLM GPS mapped and took general photographs of the affected coal dust area. Map calculations show 59 acres directly affected and photos show the depth of the coal dust and vegetation type and condition.

In the fall of 2005, the Utah Partners for Conservation and Development (UPCD), a group of 15 federal, state and private conservation land management agencies funded a wildlife sagebrush winter habitat restoration project on the Consumers Wash allotment. The project was located south of the affected coal dust area between the coal loadout and Gordon Creek. Andalex was not asked to participate in this project. The project consisted of planting approximately 200 acres, using a Lasson airator, to chop and interseed strips of sagebrush, forbs and some grasses to restore browse habitat. The project was undertaken to due a die-off of winter sagebrush habitat on the past several years.

4.2.1.7 Mitigation Measures. The monitor plan stated in the CRMP (Späth 1999), as amended, provides a means to assess impact to significant resources. No significant resources will be directly impacted by the proposed construction activities. No other mitigating measures other than those incorporated into the Wildcat Loadout M&RP have been identified unless listed below.

4.2.1.8 Monitoring and/or Compliance. ARI has committed to monitoring during the reclamation portion of the project according to the M&RP. BLM and UDOGM personnel would approve the reclamation upon completion and conduct annual inspections until the area is deemed fully reclaimed or identify areas, which may require additional work to accomplish the reclamation standard of success prior to bond release.

4.2.2 Alternative B – No Action.

If the No Action alternative were selected, the proponent would not be authorized to implement the project. Therefore, no direct, indirect, or cumulative impact would occur to soils, vegetation, threatened, endangered and sensitive species, cultural and historic preservation, wildlife or land use and grazing.

4.3 Cumulative Impacts Analysis:

"Cumulative impacts" are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions.

4.3.1 Reasonably Foreseeable Action Scenario (RFAS).

The following reasonably foreseeable action scenario (RFAS) identifies the actions that would cumulatively affect the same resources in the cumulative impact area as the PA and alternatives. The following RFAS was compiled based on past/present activities:

Coalbed Methane Development. Development of the area for coalbed methane includes the Price Coalbed Methane Project Final Environmental Impact Statement (PCMP FEIS), which surrounds the proposed action, as well as development of the area described in the Ferron Natural Gas Project Final Environmental Impact Statement (FNGP FEIS) located east of the proposed action. Between the two projects and the companies that make up the development, as many as, as many as 1,700 wells could be drilled over the next 20 years. Included within this reasonably foreseeable development would be the construction and operation of additional transportation and utility corridors to facilitate the operation and development of the gas fields.

The physical presence of man and equipment could result in added traffic, which could result in vandalism to cultural sites. The loss of the data from undiscovered cultural sites could be a cumulative impact of this action.

Coal Mining and Related Activities. The Wildcat Loadout Facility receives coal transported by heavy truck on a 24-hour basis on the Consumers Road from many of the mines within the region.

Coal brought to the Wildcat Loadout is prepared and sorted to be loaded and transported via the Utah Railway Line that runs just north of the proposed action area.

The Consumers Road also is used as an access to the underground coal Horizon Mine and 20 acre disturbed area associated with its surface operations. This facility is located approximately nineteen miles northwest of the proposed action area. Coal produced by this operation is transported to the Wildcat Facility.

4.3.2 Cumulative Impacts.

A cumulative impact, as defined within 40 CFR 1508.7, is the impact on the environment which results from the incremental impact of the action (proposed action) when added to other past, present and RFAS. To assess the cumulative impacts of the proposed action, it is necessary to identify those components of the environment that could be affected that were

not minimized by actions taken as part of the PCMP FEIS and proposed action scenario or mitigated upon review of direct and indirect impacts of the proposed action. Specific issues raised during scoping form the basis of review of cumulative impacts.

Direct and indirect impact to resources would be minimal. Development of the proposed action would not result in any other additional disturbance to described resources. The construction of the proposed projects will not open the area to increased traffic and recreational use and will have no cumulative impact on cultural resources. Actions taken as part of the proposed action, as well as mitigation outlined in the Wildcat Loadout Facility M&RP and stipulations as part of UDOGM and BLM permits for erosion control, protection of resource values, reclamation and revegetation to minimize impacts have eliminated the need for mitigation of area wide cumulative impacts.

5.0 CONSULTATION AND COORDINATION

5.1 Introduction:

The issue identification section of CHAPTER 1.0 identifies those issues analyzed in detail in CHAPTER 4.0. APPENDIX A provides the rationale for issues that were considered but not analyzed further. The issues were identified through the agency involvement process described in sections 5.2 and 5.3 below.

5.2 Persons, Groups, and Agencies Consulted:

5.2.1 Federal Government/Agencies.

- U.S. Department of Agriculture
  - Natural Resource Conservation Service - Soil Resources
- U.S. Department of the Interior
  - U.S. Fish and Wildlife Service - Threatened and Endangered Species and Raptors

5.2.2 State of Utah.

- Department of Community and Economic Development
  - State Historical Preservation Office - Cultural Resources
- Department of Natural Resources
  - Division of Oil, Gas and Mining - Mine Plan and Resource Analysis
  - Division of Water Rights - Water Rights
- Division of Wildlife Resources - Wildlife Resources

5.2.3 Local Governments and Organizations.

- Carbon County Recorder - Land Use and Resource Analysis
- Carbon County Planning and Zoning - Land Use and Zoning
- Carbon County Commissioners - Land Use and Easements

5.2.4 Industry and Business.

- SENCO-PHENIX; Price, UT - Cultural Resources
- Blackhawk Engineering; Helper, UT – Ditch & Pond Design
- Andalex Resources, Inc.; Price, UT - PA

5.3 List of Preparers:

5.3.1 BLM Price Field Office: Price, Utah.

Name	Title	Responsible for the Following Section(s) of this Document
Mike Robinson	Realty Specialist	Project Manager / Realty Specialist
Blaine Miller	Cultural Specialist	Cultural Resource Specialist
Brad Higdon	NEPA Coordinator	NEPA Coordinator
David Waller	Wildlife Biologist	Wildlife Biologist
Jeff Brower	Hydrology Specialist	Hydrologist
Karl Ivory	Range Management Specialist	Threatened, Endangered & Sensitive Species, Natural Resource Specialist
Mike Tweddel	Range Specialist	Wild Horse and Burro Specialist

5.3.2 EIS Environmental & Engineering Consulting: Helper, Utah.

Name	Title	Responsible for the Following Section(s) of this Document
Katie J. Nash	TES Specialist	Project Manager/ Impact Analysis / Maps
Melvin A. Coonrod	Principle Consultant	Impact Analysis / Construction / Reclamation
David Basinger	Botanist	Vegetation and Habitat
Dean Nyffeler	Geologist	Soils
J.T. "Tom" Paluso	Chief Engineer	Hydrology
DeeAnn Finger	Admin. Assistant	Editing and revisions
Phil Jensen	Director of Drafting Operations	Drafting

6.0 REFERENCES, GLOSSARY AND ACRONYMS

6.1 References Cited:

Andalex Resources, Inc., Tower Division. Wildcat Loadout Facility, ACT/007/033. Mining & Reclamation Plan. 1988 (as amended).

Atwood, Duane et al. 1991. Utah Endangered, Threatened and Sensitive Plant Field Guide, USFS Intermountain Region. Ogden, Utah.

BLM. 1989. Price River Management Framework Plan, as amended. Moab District Office. Moab, Utah

BLM. 1997a Final Environmental Impact Statement, Price Coalbed Methane Project, Moab District, Moab, Utah.

BLM. 1997b Programmatic Agreement Among the USDI Bureau of Land Management, Price Field Office; The Utah State Historic Preservation Office; The Advisory Council on Historic Preservation and River Gas Corporation Regarding Coalbed Methane Gas Field Development, Price Field Office, Price, Utah.

Dalton, L.B., J.S. Price and L.A. Romin. 1990. Fauna of Southeastern Utah and Life Requisites Regarding Their Ecosystems. Publication no. 90-11 Division of Wildlife Resources in cooperation with Utah Department of Natural Resources. Salt Lake City, Utah. 326 pp.

General Land Office, 1930. Map of Township No. 13 South, Range No. 9 East, of the Salt Lake Base and Meridian, Utah, U. S. Surveyor General's Office, Salt Lake City, Utah.

Jensen, E.H. and J.W. Borchert. 1988. Soil Survey of Carbon Area, Utah. Soil Conservation Service, in Cooperation with the Bureau of Land Management and Utah Agricultural Experiment Station. 249 pages.

Jensen, Ray. Email communication with Katie Nash on October 24, 2006.

Mrstik, Jessica & Keith Montgomery. 2005 Cultural Resource Inventory of Division of Wildlife Resources BLM Treatment Plan, Carbon County, Utah, Montgomery Archeological Consultants, Inc, Moab, Utah.

National Park Service, 1991. How to Apply the National Register Criteria for Evaluation, National Register Bulletin #15, Department of the Interior, U.S. Government Printing Office, Washington, D.C.

Senulis, John A. 2001 An Intensive Cultural Resource Survey and Inventory of the USA 03-301, Ritzakis 33-514 Well Pads and Access Corridors and the Wildcat Access Corridor in the Phillips Petroleum Coalbed Gas Methane Field, SENCO-PHENIX Archeological Consultants, Price, Utah

Senulis, John A. 2006 An Intensive Cultural Resource Survey and Inventory of the Wildcat Loadout Expansion Area, SENCO-PHENIX Archeological Consultants, Price, Utah (Pending).

Senulis, John A. 2000 An Intensive Cultural Resource Survey and Inventory of the USA 03-301, USA 04-469, Utah 34-510, Utah 34-512 and Ritzakis 33-516 Well pads and Access Corridors in the Consumers Bench Area of River Gas Coal Methane Field, SENCO-PHENIX Archeological Consultants, Price, Utah

Späth, Carl. 1999 *Ferron Natural Gas Development Plan for Cultural Resources (CRMP)*, as modified and adopted by Phillips Petroleum Company February 23, 2001, Price, Utah.

USDI Geological Survey. 1916 (1948). Castle Gate, Utah 15' Quadrangle Map, Washington, D.C.

6.2 Glossary of Terms:

Access	Road used for passage to proposed project
Affected Environment	The biotic, abiotic, and human-related environment that is sensitive to changes due to the actions propose in any of the alternatives.
Agency	The land management agencies, in this case the BLM and OSM.
Allotment	A unit of land suitable and available for livestock grazing that is managed as one grazing unit.
Alluvium	A general term for all detrital deposits resulting from the operations of modern rivers, including the sediments laid down in riverbeds, floodplains, lakes and fans at the foot of mountain slopes and estuaries.
Alternative	Other reasonable courses of action to any proposal, which involves unresolved conflicts, concerns or alternate uses of available resources.
Ambient (air)	The surrounding atmospheric conditions.
Animal Unit Month	For the BLM allotments, it is the forage consumed by a 1,000-pound cow over a one-month period, approximately 800 pounds of forage. An animal unit month is then multiplied by 1.32 for a cow/calf operation and is equivalent to an animal month for purposes of this document.
Archaeology	The science that investigates the history of peoples by remains belonging to the earlier periods of existence.
Assessment	An evaluation of existing resources and potential impacts to them from a proposed act or change to the environment.
Background	The viewing area of a distance zone that lies beyond the foreground - middle ground. Usually from a minimum of 3 to 5 miles to a maximum of about 15 miles from a travel route, use area, or other observer position. Atmospheric conditions in some areas may limit the maximum to about 8 miles or increase it beyond 15 miles.
Commitment (mitigation)	Obligation to a measure that would diminish the severity of an impact.
Community	A group of one or more populations of organisms that form a distinct ecological unit. Such a unit may be defined in terms of plants, animals or both.
Contrast	The effect of a striking difference in the form, line, color, or texture of the landscape features within the area being viewed.
Corridor	A continuous trace of land of defined width.
Cultural Resources	The archeological and historical remains of human occupation or use. Includes any manufactured objects, such as tools or buildings. May also include objects, sites, or geological/ geographical locations significant to

	Native Americans
Cumulative Effects	As defined in 40 CFR 1508.7, cumulative effects are the impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.
Direct Impacts	As defined within 40 CFR 1508.9, these are the effects, which are caused by the action and occur at the same time and place as the action. Synonymous with direct effects.
Emergent (vegetation)	Vegetation coming into existence.
Endangered species	Any species in danger of extinction throughout all or a significant portion of its range as identified by the Endangered Species Act of 1973 (ESA). This definition excludes species of insects that the Secretary of Interior determines to be pests and whose protection under the ESA would present an overwhelming and overriding risk to man.
Environment	The surrounding conditions, influences, or forces that affect or modify an organism or an ecological community and ultimately determine its form and survival.
Environmental Assessment	A concise public document which serves to a) Briefly provide sufficient evidence and analysis for determining whether to prepare and EIS or a Finding of No Significant Impact, b) Aid an agency's compliance with NEPA when no EIS is necessary, c) Facilitate preparation of an EIS when necessary.
Ephemeral (streams)	Flowing in response only to direct precipitation and whose channel is at all times above the water table and restricted to streams that do not flow continuously for at least 30 days.
Erosion	The group of processes whereby earth or rock material is loosened or dissolved and removed from any part of the earth's surface.
Fugitive Dust	Airborne particulate matter emitted from any source other than through a stack.
Geology	That science that relates to the earth, the rocks of which it is composed and the changes that the earth has undergone or is undergoing.
Habitat	A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover and living space.
Hydrology	The science that relates to the water of the earth.

Impact	A modification in the status of the environment brought about by the Proposed Action.
Indirect Impact	As defined within 40 CFR 1508.8, these are the effects which are caused by the action but occur later in time or are removed in distance from the action, but are still reasonably foreseeable. Synonymous with indirect effects.
Interdisciplinary team	A group of people with different training representing the physical sciences, social sciences and environmental design arts assembled to solve a problem or perform a task. The members of the team proceed to solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions.
Key Observation Point	Critical viewpoints that are usually along commonly traveled routes or at likely observation points.
Landscape	That which makes up the various attributes of land surface as a result of geologic activity and weathering, such as plateaus, mountains, plains and valleys.
Mitigation	Mitigation includes a) Avoiding the impact altogether by not taking certain action or parts of actions, b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, c) Rectifying the impact by repairing, rehabilitating, or restoring the affect environment, d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, e) Compensating for the impact by replacing or providing substantial resources or environments.
One-hundred-year flood	A flood with a magnitude, which may occur once every one hundred years. A 1-in-100 chance of a certain area being inundated during any year.
Public Lands	Federally owned lands administered by the Bureau of Land Management.
Raptor	A bird of prey.
Right-of-Way	Public lands authorized to be used or occupied pursuant to a right-of-way grant.
Riparian	Any area of land directly influenced by permanent water that has visible vegetation or physical characteristics reflective of permanent water influence. This can include streams, springs, seeps, wet meadows, aspen stands, and similar habitats.
Scoping	Procedures by which agencies determine the extent of analysis necessary for a Proposed Action, (i.e., the range of actions, alternatives, and impacts to be addressed; identification of significant issues related to a proposed action; and the depth of environmental analysis, data and task assignments needed).

Significant (impact)	Impact that would cause a substantial adverse change or stress to one or more environmental resources. In general, all potential high impacts were considered to be significant, but in some cases potential moderate impacts were considered significant.
Species	A group of individuals of common ancestry that closely resemble each other structurally and physiological and in nature interbreed producing fertile offspring.
Study area	The given geographical area delineated for specific research.
Threatened species	Any species likely to become endangered within the foreseeable future throughout all or a significant part of its range.
Visual Resources	Classification of landscape based on scenic quality, sensitivity to change, and distance from the observer. Determines the amount of visible change to a characteristic landscape that is acceptable.

6.3 List of Acronyms Used in this EA:

AASHTO	American Association of State Highway and Transportation Officials
ARI	Andalex Resources, Inc.
AUM	animal unit month
BLM	Bureau of Land Management
BP	Before Present
CFR	Code of Federal Regulations
Cfs	cubic feet per second
CR	County Road
DAQ	Utah Division of Air Quality
DEQ	Utah Department of Environmental Quality
DOGM	Utah Division of Oil, Gas & Mining
DWQ	Utah Division of Water Quality
DWR	Utah Division of Wildlife Resources
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy Management Act
fps	Feet per Second
gpm	Gallons per Minute
hp	Horsepower
HWY	Highway
IMP	Interim Management Plan (BLM)
ITARC	Interdisciplinary Team Analysis Record Checklist
KOP	Key Observation Point
KV	Kilovolt
LUP	Land use plan
M&RP	Mining and Reclamation Plan

MFP	Management Framework Plan (BLM)
MG-1	Mining and Grazing Zone
MLA	Mineral Leasing Act of 1920
NAS	National Academy of Science
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1986
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OSM	Office of Surface Mining Reclamation and Enforcement
PA	Proposed Action
PAP	Permit Application Package (UDOGM)
PFO	Price Field Office
PLS	pure live seed
PM10	particulate matter with an aerodynamic diameter of 10 microns or less
PRRA	Price River Resource Area
psf	Pounds per Square Foot
R	Range
ROW	right-of-way
SEUAG	Southeastern Utah Association of Governments
SHPO	Utah State Historic Preservation Office
SLB&M	Salt Lake Base and Meridian
SMRCA	Surface Mining Control and Reclamation Act of 1977, as amended
SPCC	Spill Prevention Control and Countermeasures Plan
SPCC Plan	Spill Prevention Control & Countermeasure Plan
SWPPP	Storm Water Pollution Prevention Plan
T	Township
T&E	threatened and endangered species
TDS	Total Dissolved Solids
TES	Threatened, Endangered and Sensitive (Species)
TSS	Total Suspended Solids
U.S.	United States
UDOGM	Utah Division of Oil, Gas and Mining
UDOT	Utah Department of Transportation
UDWR	Utah Division of Wildlife Resources
UNPDES	Utah Non-point Discharge Effluent Source
UP&L	Utah Power and Light
USDI	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service
USGS	US Geologic Survey
VRM	Visual Resource Management
WSA	Wilderness Study Area

INTERDISCIPLINARY TEAM ANALYSIS RECORD CHECKLIST

Project Title: Wildcat Loadout Extension

NEPA Log Number: UT-070-07-001

File/Serial Number: UTU-48027

Project Leader: Mike Robinson, Realty

PROJECT DESCRIPTION: Andalex Resources, Inc. proposes to construct, operate and maintain an extension of the existing Wildcat coal storage and loadout facility with a total acreage of 250 acres on Federal Lands administered by the BLM.

Project Location: T. 13 S., R. 09 E., Section 33: SE¼SW¼NE¼, E½SW¼, SE¼.

DETERMINATION OF STAFF: (Choose one of the following abbreviated options for the left column)

Rationale for Determination is required for all "NIs" and "NPs." Write issue statements for "PIs"

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for significant impact analyzed in detail in the EA; or identified in a DNA as requiring further analysis

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section C of the DNA form.

Determination	Resource	Rationale for Determination*	Signature	Date
		CRITICAL ELEMENTS		
NI	Air Quality	Only slight construction. will help improve	/S/ Mike Robinson	1/18/2007
NP	Areas of Critical Environmental Concern	Map Present		1/22/07
NP	Cultural Resources	inventoried no sites	Blair Miller	1/22/07
NP	Environmental Justice	None Present Map checked	/S/ Mike Robinson	1/18/2007
NP	Farmlands (Prime or Unique)	~~None~~ Map checked	/S/ Jeff Brower	01/05/2007
NP	Floodplains	Map checked	/S/ Jeff Brower	01/05/2007
NP	Invasive, Non-native Species	Current inventories indicate no infestations in the project area.	Karl Wray	1/22/07
NP	Native American Religious Concerns	no known concerns	Blair Miller	1/23/07
NP	Threatened, Endangered or Candidate Plant Species	Current inventories indicate no TES species populations in the project area.	Karl Wray	1/22/07
NP	Threatened, Endangered or Candidate Animal Species	No habitat for T/E species	David Wall	Jan 23 2007
NP	Wastes (hazardous or solid)	No known issues	/S/ Jeff Brower	01/05/2007
NP	Water Quality (drinking/ground)	No known wells in area	/S/ Jeff Brower	01/05/2007
NP	Wetlands/Riparian Zones	No wetlands/Riparian in the area.	Karl Wray	1/22/07

Determi-nation	Resource	Rationale for Determination*	Signature	Date
NP	Wild and Scenic Rivers	Checked Map	[signature]	1/23/07
NP	Wilderness	Checked Map	/S/ Tom Gnojek	12/13/2006
		OTHER RESOURCES / CONCERNS**		
NI	Rangeland Health Standards and Guidelines	Impacts mitigated	Ray Jenson	1/23/07
NI	Livestock Grazing	Impacts mitigated by fencing & sediment traps	Ray Jenson	1/23/07
NP	Woodland / Forestry	No woodland/forestry in project area	Karl Ivary	1/22/07
NI	Vegetation including Special Status Plant Species other than FWS candidate or listed species	Potential Habitat for Creutzfeldt Cryptantha - No known population in project area.	Karl Ivary	1/22/07
NI	Fish and Wildlife Including Special Status Species other than FWS candidate or listed species e.g. Migratory birds.	Minor effects to mule deer, no raptors present	David L Waller	Jan 22, 2007
NI	Soils	Checked map	/S/ Jeff Brower	01/05/2007
NI	Recreation	checked map	/S/ Tom Gnojek	12/13/2006
NI	Visual Resources	checked map	/S/ Tom Gnojek	12/13/2006
NI	Geology / Mineral Resources/Energy Production	checked plats	/S/ Don Stephens	01/05/2007
NI	Paleontology	Surface rock has PFYC of 2 low probability of fossil occurrence	[signature]	1/23/07
NI	Lands / Access	checked plats	/S/ Mike Robinson	1/18/2007
NI	Fuels / Fire Management	Lack of continuous fuels will prevent major fire hazard.	[signature]	1/22/07
NI	Socio-economics	check map	/S/ Mike Robinson	1/18/2007
NP	Wild Horses and Burros	Not within an HMA -	[signature]	1/23/07
NP	Wilderness characteristics	checked map	/S/ Tom Gnojek	12/13/2006

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
NEPA / Environmental Coordinator	[signature]	1/23/07	
Authorized Officer	Roger L Burkart	1/29/07	

To Do Item

☒ Notify Me

☐ Mark Private

Subject	Wildcat Loadout Extension Specialist Requests
When	Due by Fri 12/08/2006 Start by Wed 12/06/2006
Priority	High
Category	Major Projects, Applications
Status	State Not started
Description	

Good Afternoon;

We are finally ready to examine the Wildcat Loadout Extension. The POD is attached and the maps will be in a following e-mail. They are also available on the following server drive: "W:\Lands\Wildcat Loadout Extension"(The POD is in the folder. The folder called "New Maps" contains the revised map of the project. The folder called "Old Maps" contains the original maps.)

POD 102306.doc

- We are revising the application to include a more standard western boundary for the ROW which originally was a metes and bounds one. It will add some 50 acres, but will make it easier to monitor.
- The Plan of Development calls for only water diversion and control structures and therefore no other facilities will be allowed unless another amendment is applied for.
- As this is a Category IV Cost Recovery Project, please keep track of the time you spend on it and turn in a log(attached below) when we are finished. It is in Excel format so you can track it on the computer instead of the old paper kind. The project code for this project will be e-mailed to you later.

Form 1323-1 Reimbursable Project Log.xls

- Here are the specialist requests for each Discipline. Please save your discipline's Request to your computer, fill it out and return it to me(preferably by e-mail). The deadline for this scoping is COB Wednesday, December 6th, 2006.

REQUEST FOR WILDLIFE REVIEW WLE.doc

REQUEST FOR COAL MINERALS REVIEW WLE.doc

REQUEST FOR CULTURAL RESOURCES REVIEW WLE.doc
REQUEST FOR FLUID MINERALS REVIEW WLE.doc

REQUEST FOR FUELS MANAGEMENT REVIEW WLE.doc
REQUEST FOR GRAZING REVIEW WLE.doc

REQUEST FOR HYDROLOGY-HAZMAT REVIEW WLE.doc

REQUEST FOR LEASEABLE-SALEABLE MINERALS REVIEW WLE.doc
REQUEST FOR PALEONTOLOGY REVIEW WLE.doc

REQUEST FOR RECREATION REVIEW WLE.doc
REQUEST FOR VEGETATION REVIEW WLE.doc

REQUEST FOR WILD HORSE AND BURRO REVIEW WLE.doc

Thanks

Mike Robinson
Realty Specialist
BLM Price Field Office
125 South 600 West
Price, Utah 84501
Phone: (435) 636-3630
Fax: (435) 636-3657

Jeffrey Brower/PFO/UT/BLM/DOI
01/05/2007 01:14 PM

To Mike Robinson/PFO/UT/BLM/DOI@BLM
cc
bcc
Subject wild cat loadout EA

Looks good. There is no mention of any gullies or rills in the project area. There are two if my memory serves me right. Although they are almost always dry, except from big storms or run off, the public could look at them as needing attention.

Jeffrey Brower, Hydrologist/HazMat
BLM Price Field Office
125 South 600 West
Price, Utah 84501

(435)636-3617

"You can't make the land go against itself, not for long, the land will rebel."
Robert Jordan

Don
Stephens/PFO/UT/BLM/DOI
01/05/2007 10:57 AM

To Mike Robinson/PFO/UT/BLM/DOI@BLM
cc
bcc
Subject Re: Wildcat Loadout Extension Specialist Requests

Mike:

There are no issues with the Wildcat loadout expanision as far as fuid minerals is concerned.

Don Stephens
BLM
Price, Field Office

Tom Gnojek/PFO/UT/BLM/DOI
12/13/2006 03:04 PM

To Mike Robinson/PFO/UT/BLM/DOI@BLM
cc Wayne Ludington/PFO/UT/BLM/DOI@BLM
bcc
Subject Re: Wildcat Loadout Extension Specialist Requests

I have completed the Request for Review (on the W: dir) and see no particular problems.

REQUEST FOR RECREATION REVIEW WLE.doc

Tom Gnojek, Outdoor Recreation Planner/Wilderness Specialist
Bureau of Land Management, Price Field Office
Price UT 84501 (435)636-3631

REQUEST FOR RECREATION/WILDERNESS STUDY AREA/VRM REVIEW

To: Recreation Planner Date: December 13, 2006

FROM: Mike Robinson, Realty Specialist

Reference No. (lease, case, project, EAR, etc.): UTU-48027
Company Name: Andalex Resources, Inc.
Project Name: Wildcat Loadout Extension
Location: T. 13 S., R. 09 E., Section 33: SE¼SW¼NE¼, E½SW¼, SE¼.
USGS Quadrangle: Standardville
County: Carbon
Description of Proposed Action: an extension of the existing Wildcat coal storage and loadout facility
Oil and Gas EA/EIS Area: None
DATE RESPONSE NEEDED: December 6, 2006

SF-299, PLAN OF DEVELOPMENT AND LOCATION MAP ATTACHED

****

RESPONSE

Recreation - Since the use of this site is well established impacts to recreation shouldn't be affected even by the site's expansion.

Wilderness/WSA – none present

VRM – The area is within Class III currently and in the proposed RMP. The level of change to the landscape may be moderate in its impact.

_____ Monitoring hours **estimated**
_____ Processing fee hours **actual**

Tom Gnojek_____ ____December 13, 2006_____
Recreation Planner, Date

Wildcat Loadout Expansion Project
BLM Pre-Application Meeting
& Subsequent Onsite
September 27, 2006, 1:00 pm

Name	Initials	Company/Agency
Dave Shaver	DS	Andalex Resources
Blaine Miller	BM	Bureau of Land Management
Jeff Brower	JB	Bureau of Land Management
Mike Robinson	MR	Bureau of Land Management
Sue Berger	SB	Bureau of Land Management
Mel Coonrod	MC	Environmental Industrial Services
Katie Nash	KN	Environmental Industrial Services

DS - Introduction to Wildcat Coal Loadout Expansion Project.

- The loadout site is permitted under UDOGM.
- At this time there are 4 sediment ponds located within the current permit area.
- Andalex would like to expand their ROW to include the entire southeast ¼ of Section 33.
- Approximately 80-100 acres is already under lease by Andalex.
- Existing drainages would not be changed. Andalex would build drainage ditches that run into a central sediment pond.

MR - Would do an ID Team Checklist or a Specialist Request.

DS - No cultural has been done on this site yet. Andalex will contact SencoPhenix for a class III Archaeological study.

MC - Can EIS complete a habitat delineation to determine whether a TES survey is warranted. The current field season is over and we are not sure of Andalex's timeline.

DS - Time line is as soon as possible.

JB - Hydrological questions. Are there culverts currently placed in the areas where the road crosses the drainages.

DS - Andalex will try to stay north and west of the main oil and gas access road, but for EA purposes, assume the entire area would be disturbed.

MC - Issues as of now… Wildlife, Vegetation, TES, Raptors, Prairie dogs…

BM - Cultural Issues… 2 sites are located near the currently permitted area.

DS - Would need to update the Reclamation Plan for UDOGM.

MC – EIS would just tier off of the MRP for EA purposes.

SB - BLM will need to send OSM a courtesy copy of the EA.

MR - Need to schedule an onsite and do scoping.

Reasonable Foreseeable Future Actions – Address the expansion of the coal piles, possibly expanding the SE piles to the East for expansion of facility capacity and new truck dump location. Would be immediately next to the existing coal pile.

Cumulative Impacts – Only include those cumulative impacts associated with oil and gas lease development.

Needed Prior to Scoping

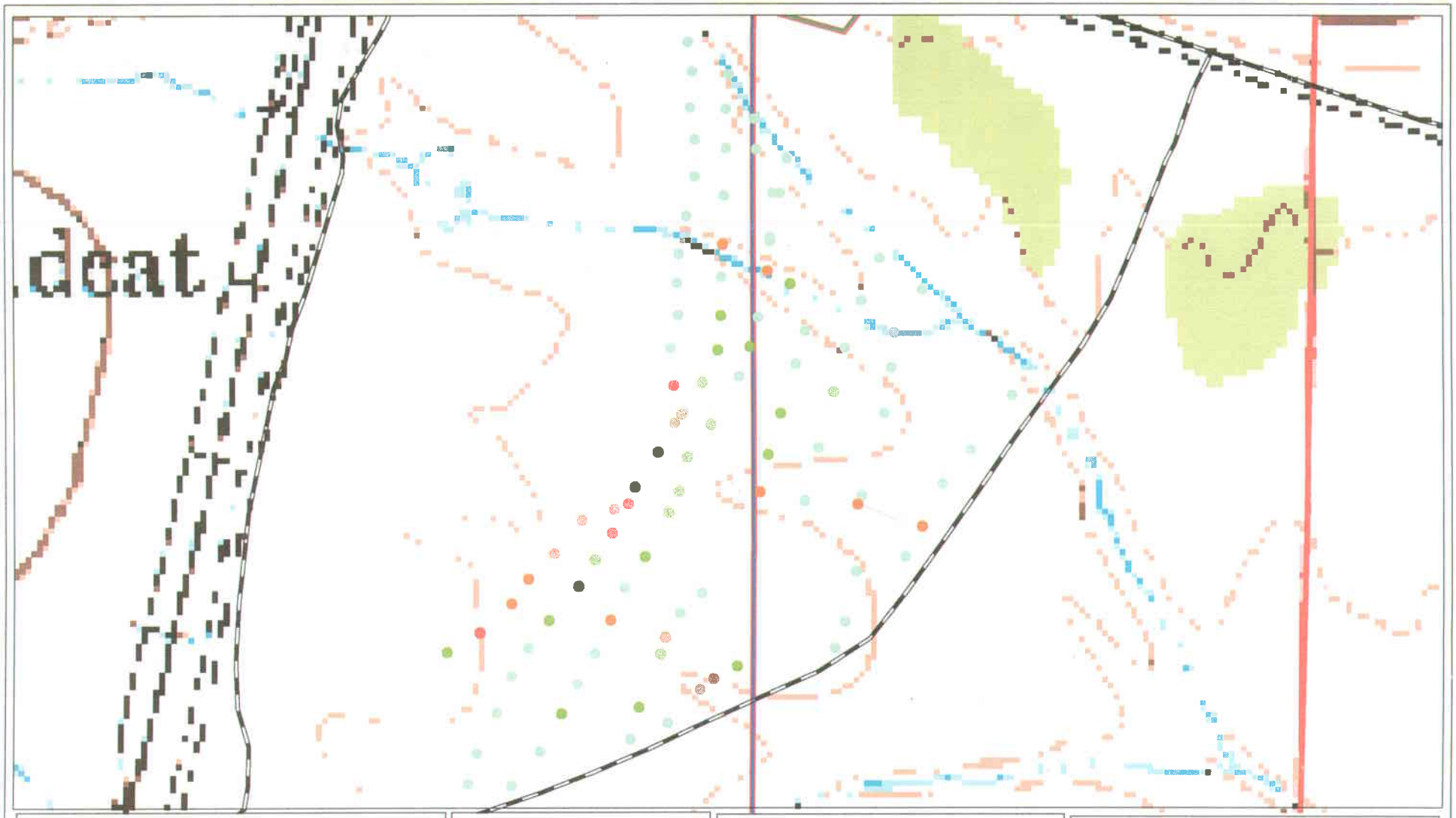
Good map showing the proposed project including proposed ditches, ponds, etc.
A thorough Plan Of Development.
POD will state that there will be no fencing around the new permit area.

Needs to be Completed

Class III Cultural Survey
Habitat delineation or TES survey (dependant on Karl Ivory)
Gather raptor information

APPENDIX U

COAL FINES ACCUMULATION MAP
E.I.S. ENVIRONMENTAL CONSULTANTS



LEGEND

- ROW Requested (98 Acres)
- U-48027 (78.5 Acres)
- U-52065 (12.5 Acres)
- Road

Section 33
Township 13 South,
Range 9 East,
Salt Lake Base & Meridian

COAL DEPTH IN INCHES

- 0 - 0.75
- 0.75 - 2
- 2 - 4.5
- 4.5 - 6.5
- 6.5 - 12

Created For

ANDALEX RESOURCES, INC.

Environmental Industrial Services
Environmental & Engineering Consulting

31 North Main Street
Helper, Utah 84526
(435) 472-3814
Fax- (435) 472-8780
knash@preciscom.net

N

Created By: Katie Nash
Date: October 11, 2006

Scale 1 " = 1,000 '

DISCLAIMER:
EIS is not responsible for any errors or omissions.
All topographic maps were downloaded from:
http://www.waterrights.utah.gov
EIS 2006

PLATE 1

December 09, 2006

On December 08, 2006 Mr. David Basinger and Ms. Katie Nash of Environmental Industrial Services conducted a coal fines depth analysis of the area east of Andalex's Wildcat Loadout located in section 33, township 13 south, range 9 east of the Salt Lake Base & Meridian.

The area was traversed in a north-south direction. A hole was dug utilizing a spade approximately every 70 ft. In areas that appeared to contain a heavier concentration of coal fines, extra holes were dug to obtain a depth. All depths were GPS'd utilizing a Trimble GeoExplorer 3. These points were then color coded by depth and placed over a topographic map for reference (Plate 1). Areas, which contained concentrated amounts of coal fines, were generally lower in elevation than surrounding areas such as sediment ponds and small drainages away from the loadout. Also areas located on the western side of larger plant material, such as sagebrush and juniper trees, had a larger concentration of coal fines.

Mr. Basinger and Ms. Nash randomly placed numerous stakes in the ground for future analysis. The stakes were placed next to an area previously tested for coal depth. Each stake was then measured from its current ground level to the top of the stake. This measurement was written on each stake for future reference. These stakes will be checked annually to evaluate the coal fine depth per year.

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

PERMITTEE	ORDER & FINDINGS OF PERMIT DEFICIENCY
Mike Glasson, Environmental Coordinator Andalex Resources Inc. Wildcat Loadout P.O. Box 902 Price, Utah 84501	
PERMIT NUMBER C/007/0033	
TASK ID # 2031	

PURSUANT to R645-303-212, the DIVISION ORDERS the PERMITTEE, Andalex Resources Inc., to make the requisite permit changes enumerated in the Findings of Permit Deficiency in order to be in compliance with the State Coal Regulatory Program. These findings are to be remedied in accordance with R645-303-220.

FINDINGS OF PERMIT DEFICIENCY

Accumulations of wind blown coal fines and road dust have been an issue of concern at this site for quite sometime. In 1994, the Division of Oil Gas and Mining (DOGM) issued a notice of violation (N94-34-1-3) for accumulations of coal fines on the ground surface east of the disturbed area. In 1999, DOGM received a letter from the Division of Wildlife Resources (DWR) concerning the effects of coal fines on vegetation and wildlife habitat in adjacent areas. DOGM and DWR Biologists confirmed an effect on vegetation (June 18, 1999 Memo to File from Paul Baker). Recently, coal fines have accumulated to depths greater than three inches on undisturbed soils east of the coal stockpiles between sediment ponds A and B (Patrick Collins report March 2003, Division Incoming Record 0001).

The effect of dust on the productivity and diversity of vegetation has been documented in several studies. Coal dust varies from 3 – 100 microns in diameter (Rao, 1971). Plants are affected most by dust grains less than 10 microns in diameter (Sharifi, et al. 1997). Physically, accumulations of dust on vegetation effects gas exchange, water use efficiency and water balance of plants, making the plant more susceptible to environmental stresses and resulting in a reduction in vegetative growth and reproduction (Farmer, 1993). The most sensitive species of plants are the lichens, a component of biological soil crust (Farmer, 1993). However, reduced rates of photosynthesis and increased leaf temperatures resulting in lower productivity of Atriplex canescens (Four-wing saltbush) has also been documented as a result of dust accumulation (Sharifi et al. 1997). In addition, accumulations of coal fines can alter soil

chemistry affecting species establishment (Rao, 1971). Ultimately changes in plant productivity and diversity, affect wildlife.

The Division of Oil, Gas and Mining derives its regulatory authority relative to the control of coal fine accumulation from wind blown sources from R645-301-526.220 *et seq.* This Regulation requires design drawings and specifications of each support facility sufficient to demonstrate how each facility will comply with applicable performance standards, including the protection of fish, wildlife, and related environmental values; and minimization of contributions of suspended solids to stream flow or runoff outside the permit area. These design drawings are lacking in the Mining and Reclamation Plan (MRP).

The MRP indicates in Section R645-301-212, page 2-4 that coal fines will be vacuumed if deemed necessary. It is the Division's opinion that vacuuming is disruptive to undisturbed soils and may allow small particles to re-enter the atmosphere to be deposited again at some distance from the vacuuming site.

To remedy the permit deficiency and effects of coal fine accumulation on undisturbed soils within the permit area, the Division requires that:

1) The Mining and Reclamation Plan must include design specifications of measures already in place and/or to be put into use to control wind blown coal fine accumulation and coal particles blown from stockpiles, roadways, and other disturbed areas associated with the mine. This information must be provided separately from the Air Quality Approval Order DAQE-005-00 found in Appendix B.

2) The Mining and Reclamation Plan must describe removal of accumulations of coal fines on undisturbed soils within the permit area after consultation with the Division. The method of removal should be described as scraping (rather than vacuuming), to be followed by seeding.

3) The Mining and Reclamation Plan must address include a plan for monitoring of coal fine deposition outside the permit area, specifically east of the permit boundary (since the prevailing winds are from west to east).

ORDER

Andalex Resources Inc., is hereby ordered to make the requisite permit changes in accordance with R645-301-526.220 *et seq* and R645-303-220 and to submit a complete, and adequate application for permit change to address the findings of permit deficiency within 60 days of the date of receipt of this order.

Ordered this 18th day of November 2004, by the Division of Oil, Gas and Mining.

Mary Ann Wright, Acting Director
Division of Oil, Gas and Mining

References Cited

Farmer, Andrew M. 1993. The Effects of Dust on Vegetation – A Review. Environ Poll 79 (1993):63-75.

Rao, D.N. 1971. A study of the Air Pollution Problem Due to Coal Unloading in Varanasi, India. pp. 273-6, In. Proceedings of the Second International Clean Air Congress. H.M. Englund and Y. W.T. Beery, Eds. (Academic Press: New York).

Sharifi, M.R., A.C. Gibson, P.W. Rundel. 1997. Surface Impacts on Gas Exchange in Mohave Desert Shrubs. J. Applied Ecology 34:837-846.

Thompson J.R., P.W. Meuller, W. Fluckinger and A.J. Rutter. 1984. The Effects of Dust on Photosynthesis and its significance for Roadside Plants. Environmental Pollution Series A, 34: 171-190.