C/025/005 Incoming

#4039

OK

Alton Coal Development, LLC
463 North 100 West, Suite 1
Cedar City, Utah 84720
Phone (435) 867-5331 • Fax (435) 867-1192

Date: March 1, 2012

Daron R. Haddock
Coal Program Manager
Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, UT 84114-5801

Subject: Mine and Reclamation Plan Addendum – Addendum to Appendix 3-5 and Appendix 3-6 - Annual Sage-Grouse Habitat and Mitigation Report.

Dear Mr. Haddock,

Enclosed are C1/C2 forms and 4 clean copies of the Addendum to Appendix 3-5 titled 2012 Action Plan and Appendix 3-6 - Annual Sage-Grouse Habitat and Mitigation Report containing the 2011 annual report, "Greater Sage-grouse Population and Habitat Improvements, Progress Report for Alton Coal Development, LLC January 16, 2012".

Please let me know if you have any questions or concerns. I can be contacted at (435) 691-1551

Sincerely,

B. Kirk Nicholes
Resident Agent

File in:
☐ Confidential
☐ Shelf
☒ Expandable
Date Folder 030212 C/0250005
Incoming

RECEIVED
MAR 02 2012
DIV. OF OIL, GAS & MINING

APPLICATION FOR COAL PERMIT PROCESSING

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

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow **Permit Number:** C/025/0005
Title: Greater Sage-grouse Populations and Habitat Improvements, Progress Report
Description, Include reason for application and timing required to implement:
The submital is an addition to the Appendicies of Chapter 3

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

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

Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you. (These numbers include a copy for the Price Field Office)

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

B. Kirk Nicholes
Print Name

B. Kirk Nicholes, Registered Agent 3/1/12
Sign Name, Position, Date

Subscribed and sworn to before me this 1st day of March, 20 12

Notary Public

My commission Expires: 7/22, 2012

Attest: State of Utah } } ss:
County of Iron

MICHAEL N FRANCE
Notary Public
State Of Utah
My Commission Expires 7-22-2015
COMMISSION NO. 611933

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining
		RECEIVED MAR 02 2012 DIV. OF OIL, GAS & MINING

Form DOGM- C1 (Revised March 12, 2002)

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

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow **Permit Number:** C/025/0005
Title: Greater Sage-grouse Populations and Habitat Improvements, Progress Report

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

Add	Replace	Remove	DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☒ Add	☐ Replace	☐ Remove	Greater Sage-grouse Population and Habitat Habitat Improvements Progress report; added to Volume 2, as Appendix 3-6
☐ Add	☒ Replace	☐ Remove	Volume 2, Chapter 3 Table of Contents Page iv and v
☒ Add	☐ Replace	☐ Remove	2011 Action Plan add as addendum to Volume 2, Chapter 3 Appendix 3-5
☐ Add	☐ Replace	☐ Remove	
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.	Received by Oil, Gas & Mining
	RECEIVED MAR 02 2012 DIV. OF OIL, GAS & MINING

PHOTOGRAPHS

APPENDICES

DRAWINGS

Greater Sage-grouse Population and Habitat Improvements

ADDENDUM TO 3-5

2012 Action Plan

February 29, 2012

Steven L. Petersen, Ph.D.
Sage-grouse Population and Habitat Consultant

Introduction

Greater sage-grouse conservation efforts in the Alton region have focused on predator control and management, sage-grouse population and habitat monitoring, and the use of decoys to attract birds to more long-term sustainable breeding grounds near the mine site (Sink Valley) and in areas where sage-grouse lekking ended over two decades ago. In response to discussions between ACD, the Utah Division of Wildlife Resources (UDWR) and Utah Department of Oil, Gas, and Mines (UDOGM), adjustments to sage-grouse population and habitat monitoring plans have been necessary. The purpose of this addendum is to provide a specific description of the plans that will be implemented for conserving sage-grouse in the Alton and surrounding areas. This information is an amendment to the procedures and protocols established by ACD within the mitigation plan (Appendix 3-5).

Predator Control

Predators will be controlled in the Alton region by USDA Wildlife Services (WS) (Appendix A). Ravens and crows will be taken using poison treated eggs. Coyotes, foxes, and other small mammal predators will be controlled by trapping or shooting. To increase the effectiveness of predator control specialists in reducing impacts to sage-grouse, primary areas will be identified and mapped that WS can use when making plans for trapping and poisoning predators. Some of the areas that have been identified as key sites include regions around Alton, Sink Valley, and Skutumpah Terrace. Aggressive predator control methods are needed to sustain the sage-grouse population by reducing morality to chicks, juveniles, and adult birds. Even though golden eagles have been observed taking adult sage-grouse and can impact population densities, these protected birds will not be controlled.

Sage-grouse Population and Seasonal Habitat Use Monitoring

Ground Assessment

Through a collaborative agreement with ACD and UDWR, a sage-grouse ground-based monitoring program will be designed and implemented to locate greater sage-grouse and the habitat used by these birds throughout the year. As biologists are walking along the designated transect lines, the coordinate locations of birds, sage-grouse feathers, and fecal pellets will be recorded. These surveys will be conducted at a minimum of one per month starting following the mating season. The location of each transect will be determined using data obtained from Dr. Nicki Freys previous bird monitoring efforts, recommendations provided by Dustin Schaible, Rhett Boswell, Jason Robinson, and Joe Helfrich, and from the aerial flights conducted in March and April. Areas that will receive the greatest monitoring effort will include the mine region, Alton, Sink Valley, and Skutumpah. Dr. Frey's data will be acquired by the UDWR (Rhett Boswell) and used to identify areas with the highest bird occurrence. This data will help focus survey efforts in those regions with the great probability of locating birds and/or bird sign.

Survey Frequency

Sage-grouse surveys will be conducted depending on bird life history patterns over the course of the year.

February-April: During the lekking period, there will be no surveys conducted to prevent disturbance to mating birds.

May: During the nesting period, surveys will be used to locate bird sign in areas that do not threaten nesting hens. This includes avoiding areas with 30% shrub cover where nesting potential is high. Once flushed, hens often fail to return to the nest site reducing annual chick production.

June-July: During early brood rearing, surveys will be used to monitor bird distribution patterns, and to locate hens with chicks. No dogs will be used to flush birds during this time.

August–February: During late brood rearing to winter habitat use, birds will be located using trained bird dogs.

Flight-based Bird and Lek Surveys

Flights will be conducted during the lekking period to locate birds and active lek sites. Flight plans will be arranged and carried out based on recommendations provided by Dustin Schaible and Jason Robinson (UDWR upland game coordinator). The schedule for these flights are March 9th, March 28th, April 11th, and April 25. Dates may be postponed due to bad weather conditions. These flights will consist of transects over Sink Valley and Skutumpah Terrace.

On each flight, the Utah Highway Patrol pilot will be accompanied by a specified UDWR biologist (i.e Dustin Schaible) who has the responsibility to navigate the flight and have a clear viewing position to locate birds and leks. Two other observers will sit in the rear seats looking out opposite windows. Both the lead UDWR biologist and one of the backseat passengers will carry GPS units to record coordinate locations for each sighting. Potential backseat passengers that have been specified include Jason Robinson, Rhett Boswell, Joe Helfrich, Kirk Nichols and Steven Petersen. Data collected during these flights will be maintained by the UDWR and shared with ACD for reporting purposes. The protocol used for these flights is the same developed by Jason Robinson for all aerial surveys conducted in the state of Utah.

Shift in Breeding Behavior Using Decoys

Decoys will be used to draw birds to lekking grounds in the Sink Valley area, Skutumpah Terrace, and Fords Pasture. Decoys will be either modified from commercially produced turkey decoys (Figure 1) or from wooden cutouts that have been painted to resemble strutting male sage-grouse. At each lek area, a full-sized male decoy will be placed in the center of the lek and the wooden decoys placed around the periphery to simulate breeding behavior. The flexible

rubber decoys will be placed in the middle of the lek to prevent wounding caused by aggressive behavior from competing male birds attending the lek.

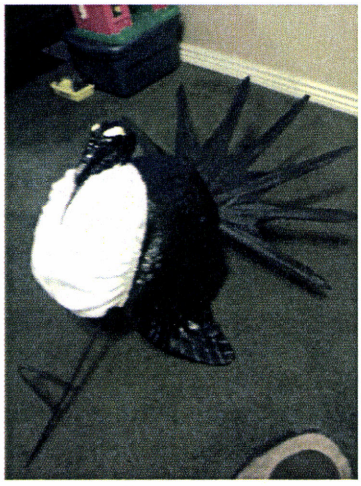

Figure 1. Decoy of a male greater sage-grouse, modified from a commercial brand of turkey (Killer B).

Bird decoys will be placed in the lek area sometime between 12:00 am and 1:00 am. One hour prior to sunrise, an audio recorder (remotely controlled player such as Fox Pro) will play greater sage-grouse breeding sounds to draw attention from neighboring birds to the decoys on the lek. ACD, UDWR, and UDOGM biologists will observe from distant locations bird sightings. Observation data to be recorded at the time of observation will include the number of birds observed on the lek, the gender of birds sighted, and any behavioral displays including aggressive displays to decoys.

When present, Joe Helfrich will also operate an infrared camera to help locate sage-grouse present in the vicinity of the lek. This will help increase the accuracy in lek attendance. Ground surveys at the leks will also coincide with aerial surveys.

Habitat Improvement and Mitigation

ACD will provide funds to the UDWR to aid in sage-grouse habitat improvements in the Alton and surrounding region. The agreements established between ACD and UDWR is a 5 year contract for $45,000 over that entire time period. At the end of the 5 year period, ACD and UDWR will reevaluated. According to Rhett Boswell, the average cost for mitigation is $80/acre for a total of 560 acres. It is predicted that the majority of habitat improvement work will

involve the cutting, chaining, or masticating of pinyon-juniper woodlands. Biologists with the UDWR (Rhett Boswell) will determine which areas will be treated.

The purpose for these improvements is to increase connectivity for sage-grouse migration and critical sage-grouse nesting and brood-rearing habitat. This will contribute toward the state goal of landscape-scale juniper removal (described as Dustin's Dream). The goal for habitat improvement will be returning a sustainable ecological condition (state) that facilitates plant community establishment and increased ecological resilience along with providing improved habitat for sage-grouse.

Appendix A

Wild Life Services Contract
And
Work Plan

Agreement No: 11-73-49-6421-RA
Accounting Code: 1737349015

COOPERATIVE SERVICE AGREEMENT
between
ALTON COAL DEVELOPMENT COMPANY (ACD)
and
UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
WILDLIFE SERVICES (WS)
for
PREDATOR CONTROL TO PROTECT SAGE-GROUSE

ARTICLE 1 – PURPOSE

The purpose of this Agreement is to conduct wildlife damage management (WDM) activities to control predator depredations on sage-grouse on and around the ACD facility.

ARTICLE 2 - AUTHORITY

APHIS WS has statutory authority under the Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C.426-426b) as amended, and the Act of December 22, 1987 (101 Stat. 1329-331, 7 U.S.C. 426c), for the Secretary of Agriculture to cooperate with States, individuals, public and private agencies, organizations, and institutions in the control of wild mammals and birds that are reservoirs for zoonotic diseases, or are injurious or a nuisance to, among other things, agriculture, horticulture, forestry, animal husbandry, wildlife, and public health and safety.

ARTICLE 3 - MUTUAL RESPONSIBILITIES

ACD and WS agree:

a. To confer and plan an annual WDM program that addresses the need for managing predation on sage-grouse on an around the ACD facility. Based on this consultation, WS will formulate annually, in writing, the program work plan and associated budget and present them to ACD for approval.

b. Each year ACD and APHIS-WS must agree to and sign the annual Work and Financial Plans, which upon execution are incorporated into this Agreement by reference.

c. When either of the Cooperating parties address the media or incorporate information into reports and/or publications, both Cooperating parties must agree, in writing, to have their identities disclosed when receiving due credit related to the activities covered by this agreement.

d. That APHIS-WS has advised ACD that other private sector service providers may be available to provide wildlife management services and notwithstanding these other options, Cooperator requests that APHIS-WS provide wildlife management services as stated under the terms of this Agreement.

ARTICLE 4 - COOPERATOR RESPONSIBILITIES

Alton Coal Development Company agrees:

a. To designate Larry Johnson, Manager, 463 N. 100 W., Cedar City, UT 84721, (435) 691-2983 as the authorized representative who shall be responsible for collaboratively administering the activities conducted in this Agreement.

b. To reimburse APHIS-WS for costs, not to exceed the annually approved amount specified in the Work and Financial Plan. If costs are projected to exceed the amount reflected in the Financial Plan, the Work and Financial Plan shall be formally revised and signed by both parties before services resulting in additional costs are performed. ACD agrees to pay all costs of service submitted via an invoice within 30 days of the date of the submitted invoice or invoices as submitted by APHIS-WS. Late payments are subject to interest, penalties, and administrative charges and costs as set forth under the Debt Collection Improvement Act of 1996. If ACD is delinquent in paying the full amount of the due service costs submitted by APHIS-WS, and/or is delinquent in paying the due late payments, and/or is delinquent in paying the interest, penalties, and/or administrative costs on any delinquent due service costs, APHIS-WS will immediately cease to provide the respective service associated with the submitted service costs. APHIS-WS will not reinstate or provide the respective service until all due service costs, and/or due late payments, and/or due interest, penalty, and/or administrative costs are first paid in full.

c. To provide a Tax Identification Number or Social Security Number in compliance with the Debt Collection Improvement Act of 1996.

d. As a condition of this Agreement, ACD ensures and certifies that it is not currently debarred or suspended and is free of delinquent Federal debt.

ARTICLE 5 – WS RESPONSIBILITIES

WS agrees:

a. To designate Michael A. Linnell, State Director, P.O. Box 26976, Salt lake City, UT 84126, (801) 975-3315 as the authorized representative who shall be responsible for collaboratively administering the activities conducted in this Agreement.

b. The performance of wildlife damage management actions by WS under this agreement is contingent upon a determination by WS that such actions are in compliance with the National Environmental Policy Act, Endangered Species Act, and any other applicable environmental statutes. WS will not make a final decision to conduct requested wildlife damage management actions until it has made the determination of such compliance;

c. To provide qualified personnel and other resources necessary to implement the approved WDM activities delineated in the Work and Financial Plan referenced in 3.a of this Agreement.

d. To bill ACD for costs incurred in performing WDM activities as authorized in the approved annual Work and Financial Plan as may be amended.

e. To notify ACD if costs are projected to exceed the amounts estimated and agreed upon in the Financial Plan. WS will cease providing goods or services until a revision to the Work and Financial Plan, as appropriate, have been agreed to and signed by both parties to this Agreement.

f. Authorized auditing representatives of ACD shall be accorded reasonable opportunity to inspect the accounts and records of WS pertaining to such claims for reimbursement to the extent permitted by Federal law.

ARTICLE 6 – WS CONDITIONS

For costs borne by WS, this agreement is contingent upon the passage of the Agriculture, Rural Development, and Related Agencies Appropriation Act for the current fiscal year from which expenditures may be legally met and shall not obligate APHIS upon failure of Congress to so appropriate. This Agreement also may be reduced or terminated if Congress provides APHIS funds only for a finite period under a Continuing Resolution.

ARTICLE 7 – ASSURANCES

Nothing in this agreement shall prevent any other State, agency, organization or individual from entering into separate agreements with WS or ACD for the purpose of managing wildlife damage.

ARTICLE 8 – CONGRESSIONAL RESTRICTIONS

Pursuant to Section 22, Title 41, United States Code, no member of or delegate to Congress shall be admitted to any share or part of this agreement or to any benefit to arise therefrom.

ARTICLE 9 – APPLICABLE REGULATIONS

All WDM activities will be conducted in accordance with applicable Federal, State, and local laws and regulations.

This agreement is not a procurement contract (31 U.S.C. 6303), nor is it considered a grant (31 U.S.C. 6304). In this agreement, APHIS provides goods or services on a cost recovery basis to nonfederal recipients.

ARTICLE 10 – LIABILITY

APHIS assumes no liability for any actions or activities conducted under this agreement except to the extent the recourse or remedies are provided by Congress under the Federal Tort Claims Act (28 USC 1346(b), 2401(b), 2671-2680).

ARTICLE 11 – AGREEMENT EFFECTIVE DATE

This Agreement shall become effective on May 17, 2011 and shall continue through May 16, 2016. This agreement may be amended at any time by mutual agreement of the parties in writing. It may be terminated by either party upon 60 days written notice to the other party. Further, in the event ACD does not for any reason reimburse expended funds, WS is relieved of the obligation to continue any operations under this agreement.

AUTHORIZATION:

Alton Coal Development Company
Cedar City, Utah:
Tax Identification Number (add Tax ID number here):

_____ _____

Manager Date

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
WILDLIFE SERVICES
Tax Identification Number: 41-0696271

_____

State Director, Utah Date

_____ _____

Director, Western Region Date

WORK PLAN/FINANCIAL PLAN

Cooperator: Alton Coal Development Company

Contact: Larry Johnson, (435) 691-2983

Cooperative Service Agreement No.:

Accounting Code:

Dates: April 18, 2011 – July 1, 2011

In accordance with the Cooperative Service Agreement between Alton Coal Development Company (ACD) and the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS), this Work Plan sets forth the objectives, activities and budget of the wildlife control activities for the period of April 18, 2011 through July 1, 2011.

Program Objective/Goal

The program objective is to provide assistance to Alton Coal Development Company in the form of a predator control program to protect native sage grouse populations. This assistance may be in the form of educational information, non-lethal methods, and direct control. When direct control is necessary, the most effective and safe tools and techniques available will be utilized.

The specific goal is to conduct a predator control program in an effort to protect nesting sage grouse populations in the immediate area of the proposed mine site this year, and in areas outlined as future mitigation sites. The focus will be to minimize raven, fox, and coyote depredation occurring during the sage grouse nesting season.

Plan of Action

The objectives of the wildlife damage management activities will be accomplished in the following manner:

1. WS will assign one Wildlife Specialist on an intermittent basis, not to exceed 160 hours annually, to this project and will supply the vehicle, field supplies and equipment.

2. Wildlife damage management will be accomplished primarily with the use of DRC-1339 (avian toxicant) treated egg baits for raven control, and calling, trapping, and shooting of mammalian predators.

3. Work hours associated with these projects include, but are not limited to: direct control activities, providing technical assistance, mandatory training, annual leave, sick leave, travel to and from official duty station, and administrative duties.

4. Kevin Dustin, the District Supervisor in the WS District Office in Richfield, Utah (435) 896-8320, will supervise this project. The project will be monitored by Mike Linnell, State Director, SLC, UT, (801) 975-3315.

5. WS will cooperate with the Utah Division of Wildlife Resources, the U.S. Fish and Wildlife Service, county and local city governments and other entities to ensure compliance with Federal laws and regulations, and applicable State and local laws and regulations.

7. Alton Coal Development Company will provide WS $6,147 to support these activities. The Financial Point of Contact is Margo Hokanson, Budget Analyst, SLC, UT, (801) 975-3315

BUDGET

Listed below are the costs of the wildlife control program outlined above:

Salary & Benefits	$ 3,772
Supplies	1,000
Vehicle Use	1,000
Program Support	$375
TOTAL	**$6,147**

ALTON COAL DEVELOPMENT COMPANY
Alton, UT 84710
(435) 648-3100

4/28/2011
Date

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
WILDLIFE SERVICES

State Director, UT — Date

Director, Western Region — Date

ORIGINAL DOCUMENT PRINTED ON CHEMICAL REACTIVE PAPER WITH MICROPRINTED BORDER

3040

ALTON COAL DEVELOPMENT, LLC
6602 ILEX CIR.
NAPLES, FL 34109

STATE BANK OF SOUTHERN UTAH
377 NORTH MAIN
CEDAR CITY, UTAH

97-177/1243

4/28/2011

PAY TO THE ORDER OF USDA Wildlife Services

$ **6,147.00

Six Thousand One Hundred Forty-Seven and 00/100********** DOLLARS

USDA Wildlife Services
1860 West Alexander Street
Ste A
Salt Lake, UT 84119

MEMO

AUTHORIZED SIGNATURE

SAFEGUARD SECURE

THIS DOCUMENT CONTAINS HEAT SENSITIVE INK. TOUCH OR PRESS HERE. RED IMAGE DISAPPEARS WITH HEAT.

⑈003040⑈ ⑆124301779⑆ 0 164210⑈

ALTON COAL DEVELOPMENT, LLC
USDA Wildlife Services

4/28/2011

3040

6,147.00

State Bank of Souther

6,147.00

Appendix 3-6

Annual Sage-Grouse Habitat and Mitigation Report

Greater Sage-grouse Population and Habitat Improvements

Progress Report

For

Alton Coal Development, LLC

January 16, 2012

Steven L. Petersen, Ph.D.
Sage-grouse Population and Habitat Consultant

Alton Coal Greater Sage-grouse Habitat Improvement

Progress Report

Steven L. Petersen, Ph.D., Consultant

YEAR 2011

The objective of this report is to present the work that was completed in 2011, which has been to protect current sagebrush habitats and to create improved conditions for greater sage-grouse conservation in the Alton Region. It is Alton Coals ongoing objective to meet the states of Utah (Utah Department of Oil Gas and Mines, Utah Department of Wildlife Resources) expectations for sage-grouse management and to achieve and exceed the Bureau of Land Management standards described in Memorandum No. 2012-043. This includes short-term treatment implementation and monitoring activities and long-term habitat improvement goals.

As presented in this report, the work completed in 2011 includes 1) identifying and improving connectivity between Alton and Hoyts Ranch, 2) removing predators that take adult and juvenile birds, 3) enhancing and diversifying intact sagebrush ecosystems found in the Alton region, and 4) participating with CCARM in establishing goals and priorities for the conservation of sage-grouse in the Alton area.

Identifying and improving connectivity between Alton and Hoyts Ranch

Corridor Qualification and Description

In 2010, greater sage-grouse (*Centrocercus urophasianus*) were trapped and collared at the Hoyts Ranch lek. Of the birds that were collared, six migrated south toward Alton beginning in early spring and arrived in the Alton and Sink Valley area as early as mid-summer. Birds remained in this area throughout the fall and winter months (Figure 1) and then likely returned to the Hoyts Ranch lek or the Sage Hen Hollow Lek for the 2011 breeding season. Monitoring of collared birds continued through January 2011 just prior to the breeding period. Collaring, monitoring, and data collection were funded by ACD. This monitoring effort was managed by Dr. Nicki Frey, a wildlife biologist from Utah State University Extension who is stationed at the Southern Utah University office located in Cedar City Utah. Dr. Frey maintains and stores all sage-grouse collared data that has been collected between 2006-2011.

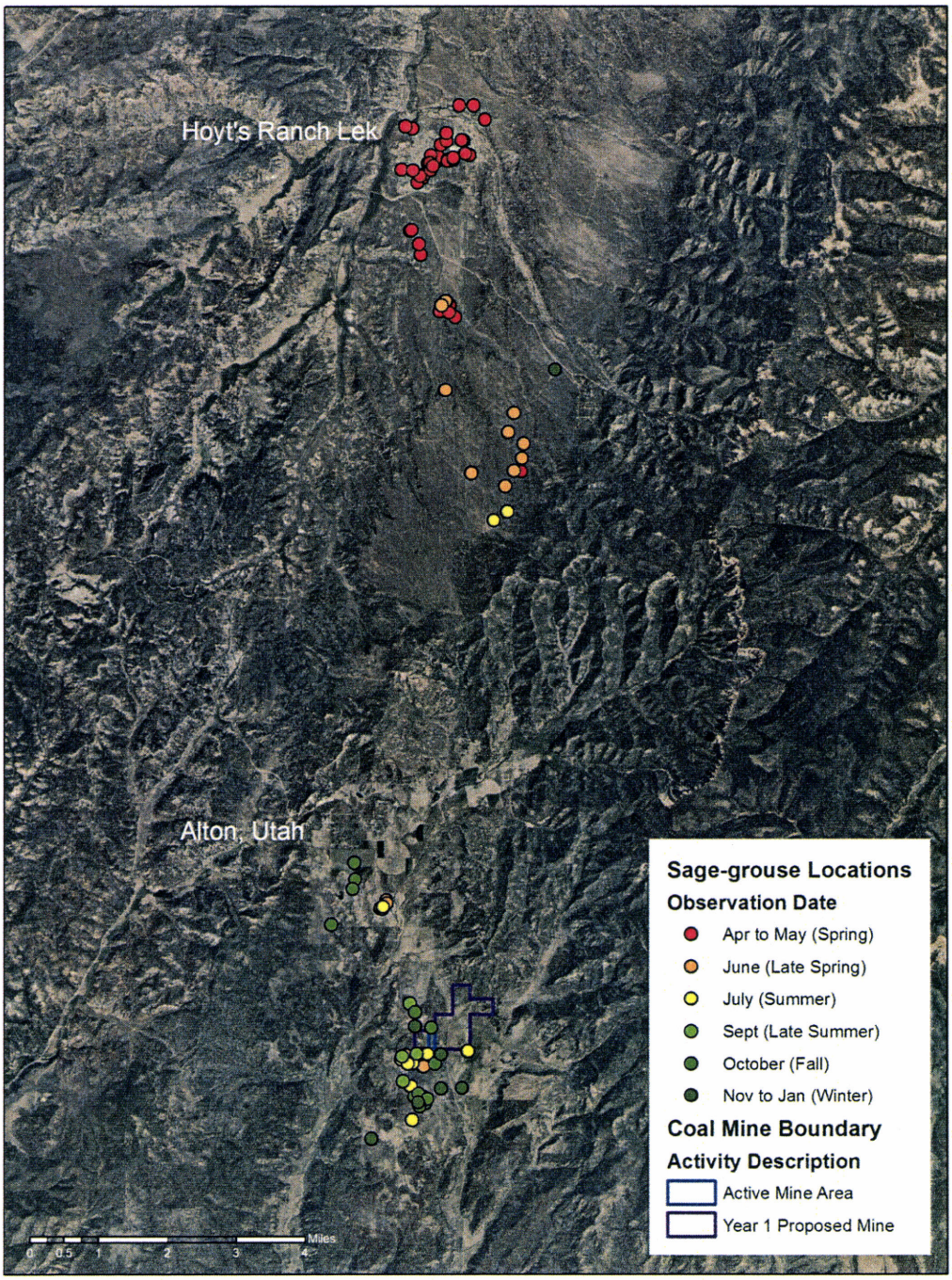

Figure 1. Locations of greater sage-grouse in the Hoyts Ranch and Alton areas by time period. Birds were collared in 2010 at the Hoyts Ranch lek and then locations recorded throughout the year by student technicians at Southern Utah University. The different colored point locations represent individual birds.

According to Dr. Frey, all birds collared and monitored in 2009 were observed between Hoyts Ranch and Sink Valley, located in the southern end of the Alton area. Using these points, she was able to measure the maximum straight-line distance for each collared bird traveled during the year. On average, birds traveled 24.9 km between both areas, suggesting that bird migration for birds generally extended between Hoyts Ranch and the Sink Valley area. Distances traveled by individual birds are provided in table 1.

Table 1. Distances traveled by birds between Hoyts Ranch and Alton (Sink Valley). Data were provided by Nicki Frey, wildlife biologist and sage-grouse specialist from Utah State University. The distance between Hoyts Ranch and Alton is approximately 20km.

Bird ID	Distance Traveled (km)
151.8098	10.2
151.7969	22.3
151.1779	21.4
151.7381	22.9
151.6600	22.9
151.1346	19.7
151.3098	23.8
Overall	24.9

Habitat connectivity and Improvements

In regards to Special Permit Condition #6 and Appendix 3-5 related to the creation of a corridor between Hoyt's Ranch and South Alton sage grouse leks.

Recorded observations from 2009 to 2010 indicate that birds migrate from Hoyts Ranch to the Alton area, primarily during summer and fall months. In 2011, birds were observed by Alton Coal Development (ACD) and local residents from the Alton area on multiple occasions and throughout the Alton and Sink Valley areas (Table 2). Sightings for 2011 have been mapped and included on Drawing 1. These data suggest that the corridor has continued to serve as an important migration pathway for sage-grouse that utilize these two important habitat areas.

Long term objectives of this work have been to contribute to overall habitat improvement and connectivity between these two important areas. This work has been to facilitate long-term annual migration of sage-grouse between Hoyts Ranch and Alton that enables the birds to continue to use the Alton area for foraging and raising their young. It has also emphasized the need to reduce tall tree structures that act as potential perching sites for hunting hawks and eagles and maintains cover structure that increases predator vulnerability (Gregg 1991).

Table 2. Observations of sage-grouse recorded in 2011 within the Alton region. Most observations were made by employees of Alton Coal Development (ACD) or local residents of Alton, Utah.

Date	Time of observation	Number of birds	Location
11/23/2010	10:30 am	10-12	South boundary, south of proposed Pit 1 (ACD)
3/16/2011	9:00 am	15	South boundary, south of original topsoil stockpile 3 (ACD)
3/28/2011	10:12 am	10	Flew from the NE corner of Pit 1 toward Pond 3 (ACD)
8/15/2011		?	Observed east of the mine site (reported by resident DeLynn Sorensen).
8/23/2011		3	Observed north of the Swapp Cabin (reported by resident Richard Dane)
8/30/2011		1 hen 3 chicks	South of Alton (reported by resident N. Sorensen)
9/7/2011	7:35 am	1	North intersection near the county bypass road (ACD)
9/12/2011			Grouse seen on the road leading to the water well during early morning hours (reported by ACD mechanic)
9/21/2011	8:30 am	1	Flew from the county road going west along the south end of the Alton town alfalfa fields (ACD)
9/21/2011	11:30 am	1	Alton Cemetery (reported by Larry and Joe, ACD)
9/23/2011		11	South of Pit 2 (ACD)
9/26/2011		11	South of Pit 2 (ACD)
10/3/2011	9:00 am	14	Two set of 7 that flew over pond 3 (ACD)
10/21/2011	8:47 am	11	South of Pit 1 (ACD)
10/27/2011	7:40 am	40-50	West of spoils pile (reported by Dave Juve, ACD)
10/27/2011	9:30 am	8-10	West of spoils pile, 2 flying toward pond 3 (reported by Dave Spencer, ACD).
10/27/2011	9:30 am	12	Flew from west of the spoils pile toward pond 3 (reported by Larry and Kirk, ACD)
10/28/2011	9:30 am	10-12	Birds observed landing near LRC located below the diversion (reported by Dave Juve, ACD)
11/15/2011		4	Observed on the haul road south of the Lower Robinson Creek crossing (ACD)
11/29/2011	7:30 am	5	Flew over Pit 2 going to the West (ACD)
12/6/2011	7:30 am	20	Where Natural LCR and Diversion of LRC merge, birds were observed flying to the South side of the spoils pile (ACD)

Corridor Expansion and Revegetation

Approximately 155 acres of Utah (*Juniperus osteosperma*), Rocky Mountain (*Juniperus scopolorum*) juniper and Gambell oak (*Quercus gambelii*) encroached habitat has been treated and reclaimed within the corridor expansion area during 2011. This area has been shown to be an important pathway for greater sage-grouse migration. Corridor improvement has been focused in the area located immediately north of town, where woodland encroachment and habitat fragmentation have been extensive (Figure 2). When land treatments were initially planned, the total area that was considered approximated 1700 acres. Using Geographic Information Systems, this value was generated by digitizing a perimeter around this fragmented portion of the corridor and plans were then made to selectively treat those areas that would provide the connectivity effectively and efficiently. Steep slopes and rugged terrain that are not expected to provide sage-grouse migration pathways were not included in the treatment plans.

During the spring to fall months, Heaton Brothers cooperation, with financial support and habitat improvement consultation from ACD, continued to remove oak and juniper trees by pushing trees over or digging them up using a Heaton Brother owned tractor and loader (Figure 3). Trees were then placed in debris piles. The seedbed in tree removed sites was prepared by disking first and then burying seed using a rangeland drill (owned by ACD). Many of the forb species included in the seed mix were selected based on reports and consultation with UDWR habitat ecologists based out of Ephraim, Utah that describe species preference by greater sage-grouse hens and chicks. The seeded species will also serve as forage for grazing animals and cover for a diversity of wildlife, including sage-grouse adults and chicks. No birds have been observed in the corridor but appear to use this area based on observations of birds at both the north and south ends. The corridor work that was completed in 2011 has focused on its expansion to the east and habitat enhancement within the previously treated area (Figure 4).

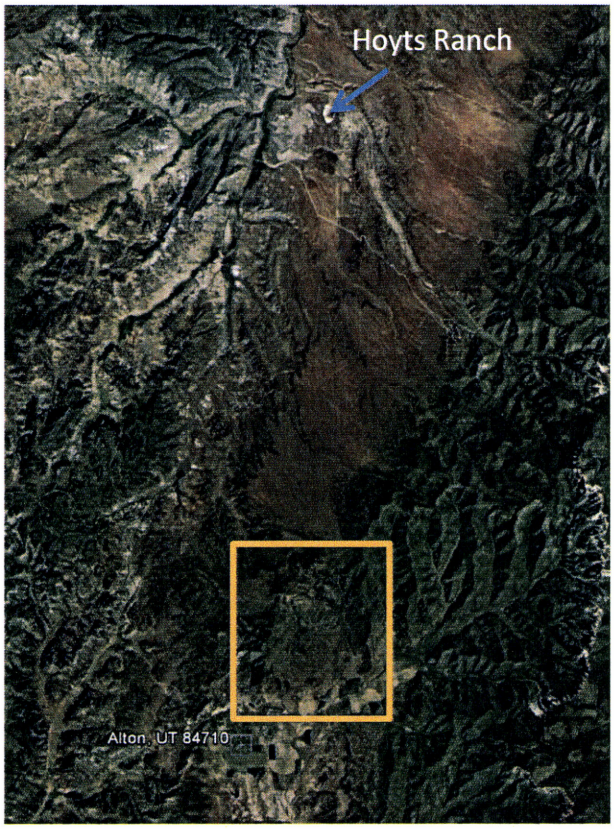

Figure 3. The yellow box highlights the primary corridor treatment area. This region has had high historic woodland establishment in comparison to the more open sagebrush communities to the north.

Figure 2. Tractor pulled disk used to create resource patches consisting of seeded forbs, grasses, and juvenile or low density sagebrush.

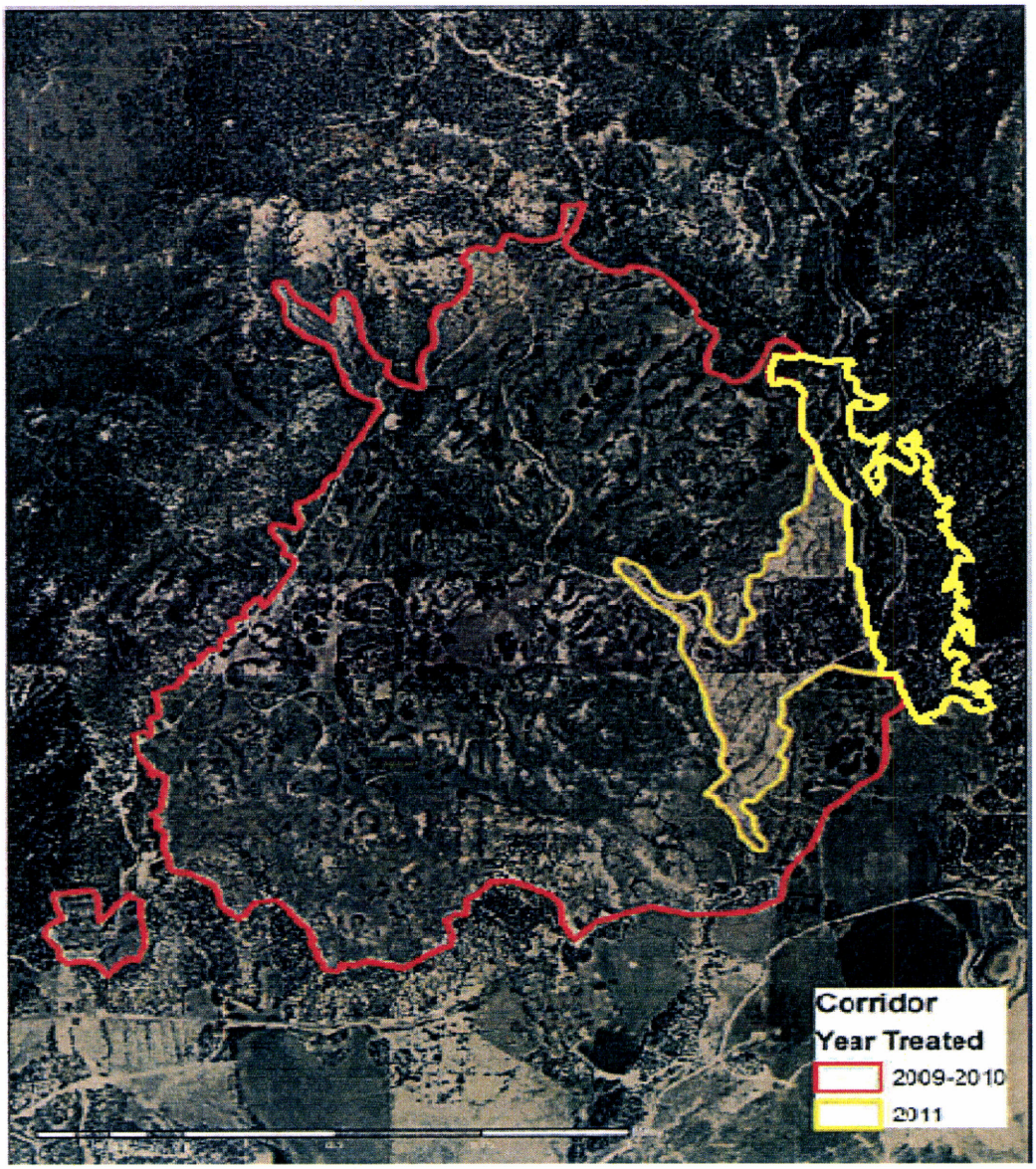

Figure 4. Corridor expansion which has consisted of tree removal and revegetaton of grasses, forbs, and shrubs. This work was designed to create conditions more suitable for sage-grouse movement, cover, and habitat use between Hoyts Ranch to the north and Alton to the south. The area treated in 2009-10 was approximately 730 acres (red outline). The area treated in 2011 was approximately 155 acres (yellow outline). This map is a 1:15,000 scale.

Removal of Predators that take adult and juvenile sage-grouse

Predator control efforts continued throughout 2011, with an emphasis on reducing coyote, crow, and raven densities. These species have been shown to have significant impacts on sage-grouse populations (Baxter et al. 2007; Connelly et al. 2003). According to Kevin Dustin, a predator control specialist from the USDA Wildlife Services department, approximately 1,100

poison eggs were distributed throughout the Alton and Sink Valley area, primarily near major roadways. Dustin explained that an estimated four eggs are needed for each single raven mortality. From this calculation, they suggest that 275 ravens were exterminated from the Alton area within the year. This control effort has reduced the number of crows and ravens throughout the region, but has likely seen highest reduction levels near town where raven densities are highest because of the more consistent food source (feed lots).

Federal trappers with Wildlife Services placed mammal traps around the Alton area. Several mammals that live in the Alton area have potential to drastically reduce sage-grouse survival, including both adults and juvenile birds (Connelly et al. 2003; Mezquida et al. 2006). Wildlife Services focused their efforts primarily on coyote removal. In 2011, a total of 18 coyotes were trapped and killed from the Alton area.

The long-term implications of continued predator control include higher chances of survival of adult and juvenile birds (Cote and Sutherland 1997) and the greater potential for greater re-establishment in revegetated habitats following mining activities.

Enhancement and diversification of intact sagebrush ecosystems in the Conservation Area

Northeast of the Alton lek is an intact sagebrush community that is located outside the direct impact zone of mining activities and makes up the core of the conservation area (Figure 5). This area is dominated by a big sagebrush - black sagebrush complex, potentially serving as nesting and brood-rearing habitat for sage-grouse. The structure of the sagebrush community within this area is predominantly decadent and low in species richness, in particular forbs and grasses. From visual inspection and based on samples collected to determine vegetation cover (using the boot-tip method), total sagebrush cover is higher than levels recommended in the habitat guidelines (15-25% canopy cover) (Connelly et al. 2000; Gregg et al. 1991). Land management treatments that increase plant communities heterogeneity while reducing ecological fragmentation have been shown to benefit lekking bird species generally (Boyd et al. 2011; Fuhlendorf et al. 2006).

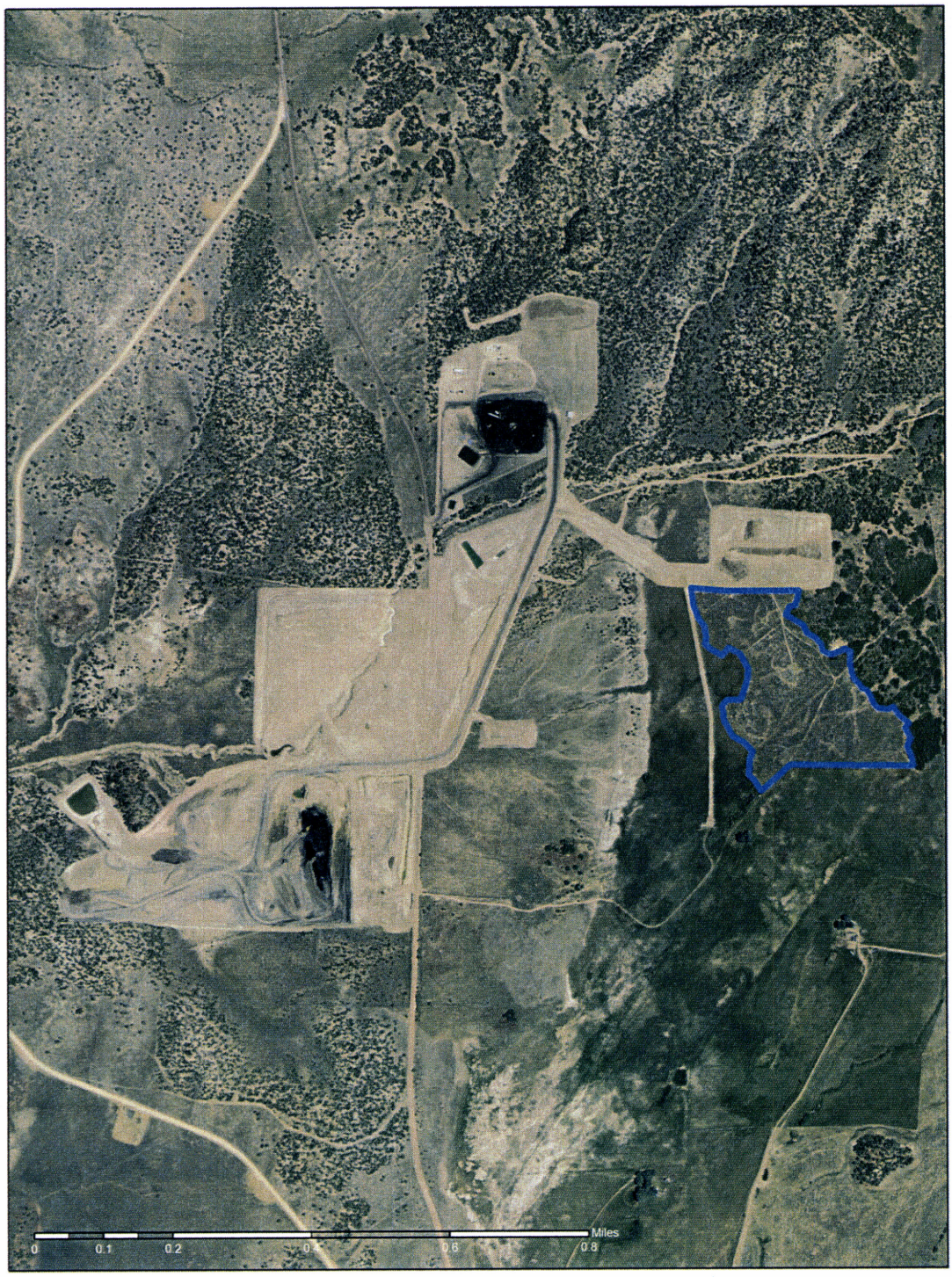

Figure 5. Location of the mine in relation to the sagebrush dominated community (blue outline) located within the Conservation Area. The sagebrush area was treated in 2010 to enhance plant species diversity and increase potential nesting and brood rearing habitat. The total area of the sagebrush dominated region is approximately 31 acres. The total area of the conservation area is approximately 72 acres. This map is displayed at a 1:11,800 scale.

In fall 2010, sagebrush was removed or thinned in small patches using a tractor-pulled disker operated by Carl Heaton (Figure 1). This method was also effective in creating an improved seedbed for greater plant establishment following seeding. Seeding after treatment was intended to increase plant community establishment and favor desirable forbs, emphasizing those important for sage-grouse diets. Similar treatments were applied in the Parker Mountains that resulting in greater forb densities and higher food availability for chicks and adult birds (Dahlgren et al. 2006). Additionally, these seeded species could also create habitat for a variety of insect populations which may be used to support sage-grouse chick diets.

Habitat diversification treatments were intended to create small-scale patches that result in localized early seral plant community structure and landscape-scale ecological heterogeneity. Furthermore, these treatments were designed to prevent excessively large patches that could potentially act as landscape fragmentation rather than stand enhancement. Following treatment, the total acreage of the conservation area was approximately 72 acres. The area of the treatment patches combined is approximately 2.5 acres (Figure 6).

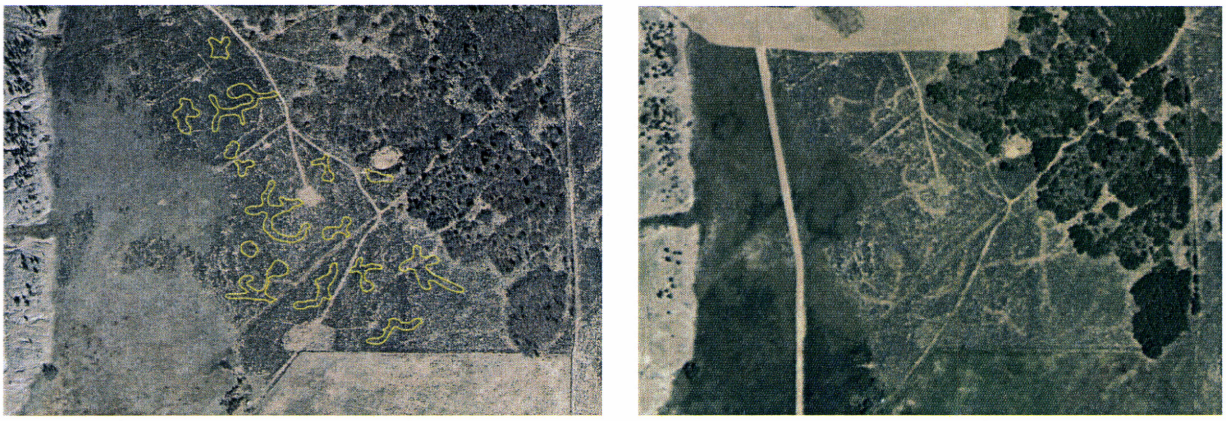

Figure 6. Proposed (left photo) and implemented (right photo) treatment patches for the conservation area. The purpose is to enhance sage-grouse habitat for potential nesting and brood rearing habitat. Patches function as sites for forb establishment and habitat diversification. Within each patch, soils were disked to reduce or eliminate big sagebrush competition enhancing forb and juvenile sagebrush establishment potential.

The seed mix applied to all treated sites consisted of both native and introduced species (Table 3). All grasses included are native species that occur in the neighboring plant communities. Most of the forbs are also natives, except for 7 species that were included because of their known use by greater sage-grouse. Grass species important for sage-grouse were

recommended from sage-grouse specialists (Mike Gregg, Erica Ersch) and Granite Seed (Lehi, Utah) where the seed was purchased.

Table 3. List of plant species included in the seed mix applied to treated patches in the conservation area. Sites were seeded in fall 2010.

Scientific Name	Common Name	Form	Origin
Bromus carinatus	mountain brome	Grass	Native
Elymus elymoides	bottlebrush squirreltail	Grass	Native
Elymus trachycaulus	slender wheatgrass	Grass	Native
Stipa hymendoides	Indian ricegrass	Grass	Native
Achillea millefolium	western yarrow	Forb	Native
Astragalus cicer	*Cicer milkvetch*	*Forb*	*Introduced*
Balsamorhiza sagittata	*arrowleaf balsam root*	*Forb*	*Native*
Cleome serrulata	*Rocky Mountain beeplant*	*Forb*	*Native*
Lactuca serriola	*prickly lettuce*	*Forb*	*Introduced*
Linus lewisii	*blue flax*	*Forb*	*Native*
Lupinus argenteus	*silvery lupine*	*Forb*	*Native*
Medicago sativa	*alfalfa*	*Forb*	*Introduced*
Melilotus officinalis	*yellow sweet clover*	*Forb*	*Introduced*
Onobrychis viciifolia	*sainfoin*	*Forb*	*Introduced*
Penstemon palmerii	*Palmer penstemon*	*Forb*	*Native*
Sanguisorba minor	*small burnett*	*Forb*	*Introduced*
Sphaeralcea coccinea	*scarlet globemallow*	*Forb*	*Native*
Trifolium repens	white Dutch clover	Forb	Introduced

One year following seeding, plant community density and cover of seeded plants was measured in Sept. 2011. Plant cover was determined using the point line-intercept method. Data samples were recorded for all plant species contacted by a dropped pin along a 15m transect line. Other surface features were also recorded including bare ground, large litter, fine litter, and dead shrub. Plant density was determined using 1-m square quadrats placed along randomly positioned transect lines.

Average shrub cover in untreated (control) plots was 52±3% compared to 7.4±1.0% in treated plots (Figure 7). Shrub density was 1.1±0.1 plants/m^2 in treated plots and 2.0 plants/m^2 in control plots (Figure 8). In contrast, perennial forb cover in treated plots was 10.2±2.0% compared to 0.5±0.3% in control plots. Forb density was 7.0±0.8 plants/m^2 in treated plots compared to 1.0±0.3 plants/m^2 in control plots. Treated plots had 27 forb species and 10 grass species that were observed in more than one plot whereas control plots had 11 forb and 4 grass species. *Trifolium repens*, an important sage-grouse forb species, had 1.1±0.3 plants/m^2

in treated plots compared to none in control plots. Similarly, *Achillia millifolium* had 0.9±0.4 plants/m^2 in treated plots compared to 0.2±0.1 plants/m^2 in control plots. Average percent bare ground was higher in treated plots, however, litter cover was more similar between treated and control plots (Figure 9). Over time, treated plots will increase plant cover and protect soils from erosion and raindrop impact.

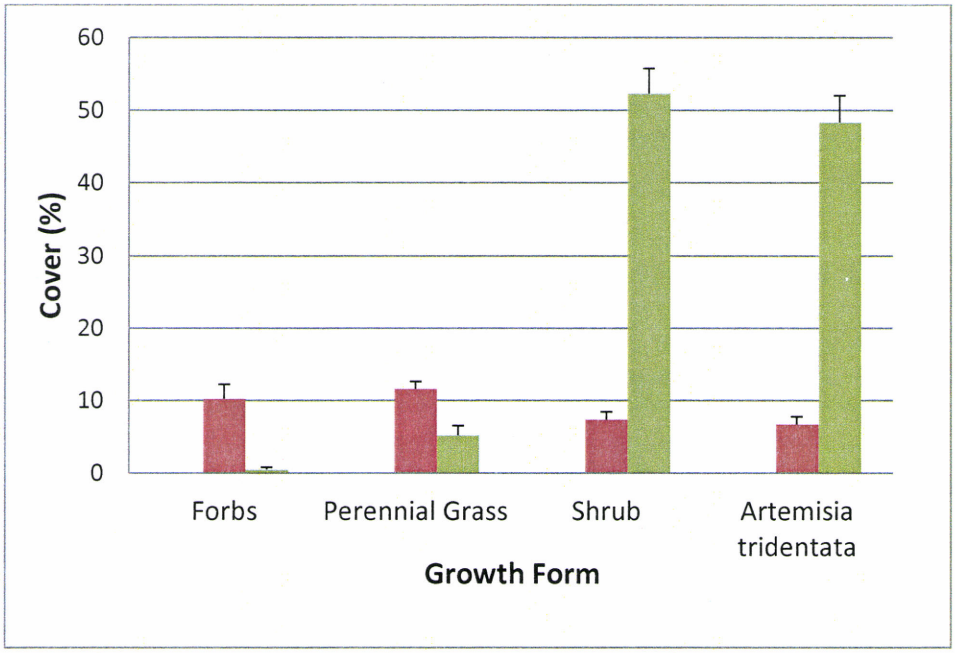

Figure 7. Percent cover of forbs, grasses, and shrubs in treated sites (red bars) compared to untreated (control) sites (green bars). Bars represent average canopy cover with error bars representing standard error values.

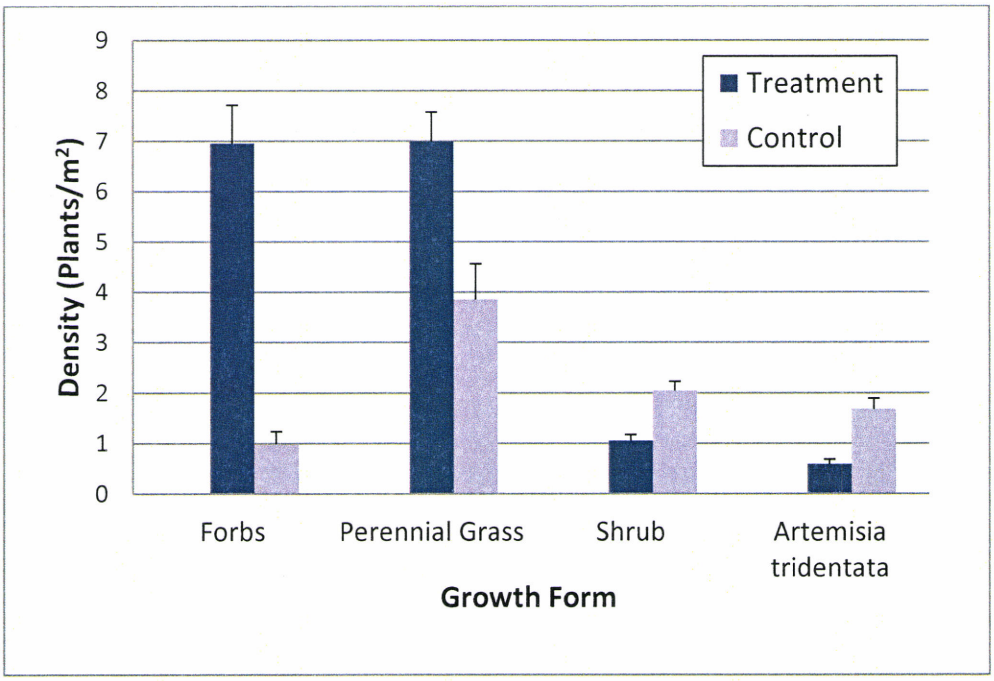

Figure 8. Plant density in relation to habitat treatment in comparison to untreated sites. Treatments were implemented in fall 2010. Bars represent average density and standard error values.

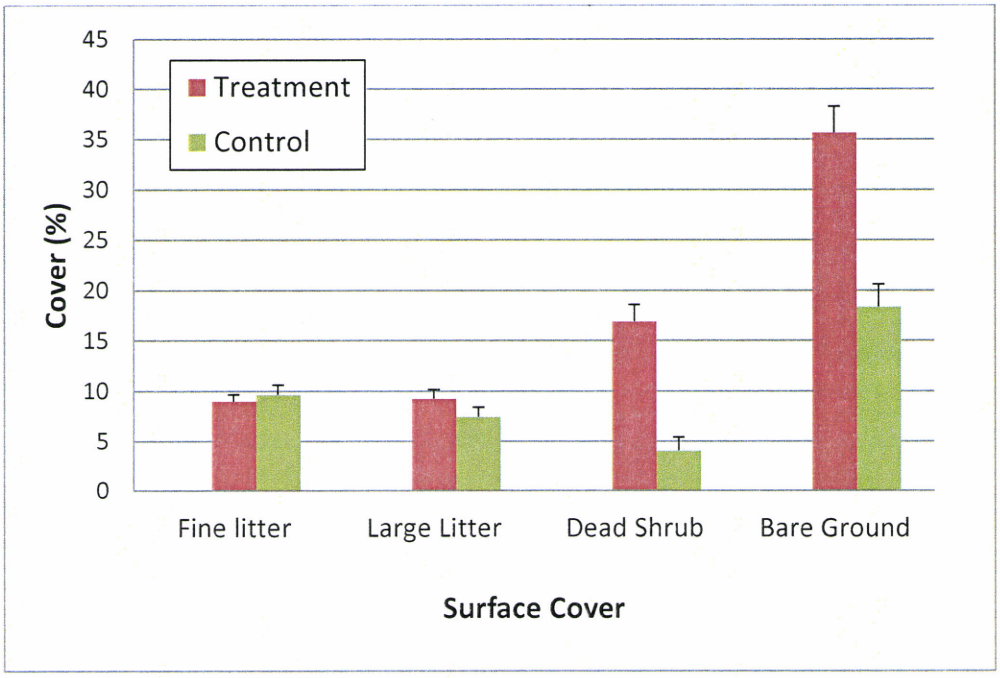

Figure 9. Cover of other surface characteristics including litter (organic debris primarily from dead plant material and percent bare ground.

Long-term implications of habitat diversification in sagebrush habitats include greater forb availability for rearing brood and for supporting adult foraging opportunities. Within the Alton area, natural successional pathways will eventually provide a recruitment and reestablishment of sagebrush seedlings, juvenile sagebrush plants and eventually a multi age-class of sagebrush adults that meet breeding guidelines established by Connelly and supported by Bureau of Land Management (Connelly et al. 2000). Tree removal efforts have been concentrated within this 31 acre sagebrush dominated region that is part of the conservation area. Over 10,000 trees were removed during 2008. Total treatment area within sage-grouse occupied areas (sagebrush dominated part of the conservation area and the corridor) totals 862 acres.

Sage-grouse Monitoring

Plans were made to trap and monitor sage-grouse at Hoyt Ranch in spring 2011 while birds were attending the Hoyts Ranch lek. Funding ($18,000) was provided by Alton Coal to support all aspects of the trapping and monitoring effort. A detailed proposal describing trapping and monitoring plans was submitted to the Division of Wildlife Resources (DWR) for consideration and approval to trap and collar sage-grouse. Based on low sage-grouse numbers attending the Hoyts Ranch lek and potentially other unknown factors, the DWR determined that trapping and collaring birds would not benefit the population and decided not to provide a certificate of authorization (COR) permitting the trapping effort. Modifications to the proposal were made and submitted, including a consideration of fall trapping near the town of Alton. Similarly, a COR was not provided to conduct fall trapping. Because permitting could not be obtained through the appropriate government agency, trapping was postponed until 2012 at which time a proposal will be submitted to the Division of Wildlife Resources for acquiring a permit to trap and collar greater sage-grouse.

Employees of the Coal Hollow mine operation were instructed to report all sightings of sage-grouse. A log of each sighting was maintained during the year (Table 2). Several birds have been observed near or on the edge of excavated pits on multiple occasions (Figure 10).

CCARM Participation

Managers and sage-grouse consultants for ACD attend CCARM meetings frequently to provide discuss sage-grouse conservation and workplans for improving habitat conditions. CCARM members and invited participants have visited the mine site where they received a tour of the mining activities and presenting with reclamation objectives. In cooperation CCARM and the multiple organizations this group represents, several signs were produced and placed at strategic locations throughout sage-grouse occupied sites in southern Utah. One sign was

placed near the mining site (Figure 11). These signs describe sage-grouse conservation efforts and helping with public awareness of efforts being made by cooperating groups.

Figure 10. Greater sage-grouse standing at the mine site at the Coal Hollow Mine. Birds were often observed near disturbed sites during mining activities in 2011.

Figure 11. Signs posted in sage-grouse occupied sites including along the roadway near the mine site. These signs describe cooperative efforts being made to improve habitat and maintain sage-grouse populations in southern Utah.

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