BLM

Roads Monitoring on BLM Lands
Final Project Report

Deliverable D51
(MSHCP Project 2005-BLM-503)

NATIONAL SYSTEM OF PUBLIC LANDS

Public Lands USA: Use, Share, Appreciate

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1. Executive Summary

The United States Department of the Interior Bureau of Land Management (BLM) conducted road monitoring activities within designated Areas of Critical Environmental Concern (ACEC) in Clark County. BLM collected data on condition and use of non-paved roads on BLM managed public lands. Data collected was used to determine where resource damage was occurring in conserved public lands, why damage may be occurring, and when and how to respond to these incidents to help eliminate or reduce resource threats/damage.

The project covered six ACECs within Clark County including more than 740,000 acres of Desert Tortoise Critical Habitat and over 200,000 acres of areas with significant cultural, natural, or geological values.

Road monitoring produced 561 point features representing incidents of various sizes and types throughout the project area. Statistically, signs damage was the most common type of incident documented, making up 36% of incident points and 26% of all incidents combined. Although some signs were in a deteriorated state they constituted only a small and insignificant portion of the total number of damaged signs.

Although line features for this project only made up approximately 20% of all incidents documented they represent approximately 75.5 miles of incursions. Through this project BLM was able to identify these sites and can now implement a restoration plan to address the restoration for them.

Documentation of areas with resource damage largely identified areas of casual use and other recreational activities. This method identified 44.6 acres of disturbance, collectively, distributed among 70 sites. Of the all the data collected for area disturbances, 70% consisted of sites that receive regular use from different types of users.

‘Volunteer Effectiveness’ was determined through validating the accuracy of data provided by volunteers. Volunteer data made up 64% of all final data and proved to be largely accurate in identifying incidents. Although not all incidents identified by volunteers received a site visit, they have all been reviewed and prioritized. Volunteer participation and contributions allowed the BLM to monitor an otherwise unfathomable large area of public lands. For instance, between

October 2010 and September 2011, volunteers contributed 1,015.5 hours and drove 10,025 miles of roads in the Gold Butte and Mormon Mesa ACECs.

The roads monitoring program shifted the BLM response to resource damage from one of reactive to preventative. Having road monitors search for and identify disturbances as early in their inception as possible gives BLM restoration efforts a better chance at being effective and successful by virtue of containing the damage and deterring future use of the affected area.

2. Introduction

Impacts associated largely with illegal motorized use on Federally managed lands within Clark County are identified in the MSHCP as significant threats to covered species. Habitat fragmentation, direct mortality of covered species, and expansion of weeds are some of the impacts that result when vehicles travel off roads. Implementation actions such as law enforcement and restoration treatments increase land use compliance and repair human caused disturbances. These two programs are made more effective through monitoring the network of roads in Clark County that are within Intensively Managed Areas and Multiple Use Management Areas important to species covered under the MSHCP. Information gathered, such as illegal incursions, public use, road/resource condition, signs and illegal activities such as dumping, would provide efficient feedback to the BLM to identify (1) problem areas; (2) priorities for future restoration; (3) sites needing cleanup; (4) roads needing maintenance; (5) signs needing replacement; and (6) motorized use patterns through traffic monitoring.

The BLM conducted road monitoring activities within designated ACEC in Clark County. BLM collected data on condition and use of non-paved roads on BLM managed public lands. Data collected was used to determine where resource damage was occurring in conserved public lands, why damage may be occurring, and when and how to respond to these incidents to help eliminate or reduce resource threats/damage.

The project covered several ACECs within Clark County including more than 740,000 acres of Critical Desert Tortoise Habitat and over 200,000 acres of areas with significant cultural, natural, or geological values.

Background and Need for the Project

Roads provide access to large tracts of public land for recreational use. Many miles of roads are located within the habitats of the MSHCP covered species in the Mojave Desert.

Figure 1. Designated road within Gold Butte.

Habitat recovery is slow in the desert. Studies show that it takes:

- 76 years for full reestablishment of total perennial plant cover and
- an estimated 215 years for the recovery of species composition typical of undisturbed areas (Abella 2010).

As a result, proliferation of roads and unauthorized off-road vehicle use has left persistent scars in the desert. (Rowlands 1980). Off-highway vehicles (OHV) remain a major source of habitat degradation for covered species. Habitat degradation:

- Disrupts water balance, thermoregulation and energy requirements of desert tortoises.(USFWS 1994)
- Reduces availability of food. (USFWS 1994)
- Increases erosion and changes drainage patterns. (Brooks and Lair 2005)

Figure 2. Tracks created by illegal operation of OHVs off designated roads in Gold Butte Wash and the resulting habitat loss.

Increased visitation and associated OHV use does not mean increased habitat damage when recreationists stay on designated roads and operate under the speed limit. It is disregard for OHV closures and road designations that sets the stage for others to follow the tracks, creating new roads and further fragmenting habitat.

Figure 3. Illegal OHV trail created by an ATV traveling cross-country.

Figure 4. Eight days later the illegal trail has become a 2-track road used by multiple visitors.

Vehicle-caused mortalities on highways and unpaved roads are also a continuing concern. It is unclear how much impact roads have on population numbers. USFWS states that roads provide, "many opportunities for accidental mortality…substantial numbers of desert tortoises are killed on paved roads." (USFWS 2011).

Figure 5. Desert tortoises cross and travel down roads. They can be hit by cars if drivers are unaware.

The BLM Las Vegas Resource Management Plan (BLM 1998) established a limitation for vehicular travel within all Areas of Critical Environmental Concern (ACEC) within Clark County in order to conserve desert tortoise critical habitat, habitat for sensitive plant and wildlife species and cultural resources. In this plan, vehicle use within the four desert tortoise ACECs and

Rainbow Gardens ACEC was limited to designated roads and trails. Use designations within the remaining ACECs were limited to existing roads and trails. Following 1998, BLM identified that new illegal roads and trails were being created in all these ACECs, threatening the protected resources. Funding was received through Clark County's Desert Conservation Program and the Southern Nevada Public Lands Management Act in 2003 to inventory existing roads and trails and complete the designation of roads to reduce threats to covered species within Coyote Springs ACEC, Gold Butte ACEC (Parts A, B, and C and overlapping cultural and geologic ACECs), Mormon Mesa ACEC, and Virgin River ACEC and. The inventory of 906 miles of routes and 1,724 features was completed in 2007. An Environmental Assessment was developed and BLM designated 812 miles of roads as open and 94 miles of roads as closed on July 15, 2008.

Following road designation, BLM began signing the open routes and signing and restoring closed road segments and habitat damage created by vehicles travelling off designated roads. Monitoring was conducted by BLM staff and its agents on a limited basis due to inadequate funding. Active members of the public and the Southern Nevada Cultural Site Stewardship Program provided additional eyes on the ground, notifying BLM of new resource damage and emerging threats to sensitive areas.

Management Actions Addressed (As identified in the MSHCP)

The project directly implements the following Conservation Measures identified in section 2.8 of the MSHCP.

- BLM(34) Monitor road and trail proliferation in desert tortoise ACECs, Las Vegas bearpoppy management areas and WSAs.
- BLM(71) Limit motorized uses in the Piute/Eldorado "Conserved Habitat" to designated roads and trails.
- BLM(71) Limited motorized vehicles in WSAs to existing roads and trails as listed in inventory maps, or as otherwise authorized. Close unauthorized roads in WSAs.
- BLM(207) Implement the following management actions in desert tortoise ACECs (743,209 acres):
    - Implement inventory, monitoring and research projects dealing with management issues within desert tortoise areas of critical environmental concern.
    - Designate as "Limited to designated roads and trails" for all motorized and mechanized vehicles.
- BLM(211) Designate 1,107,800 acres as limited to designated roads and trails for all motorized and mechanized vehicles within desert tortoises ACECs, Rainbow Gardens ACEC and areas adjacent to Red Rock Canyon NCA and Spring Mountain NRA.

- BLM(221) Limit vehicular use to designated roads and trails in and around mesquite woodlands.

The project also includes actions that support other agency efforts to implement the following Conservation Measures identified in section 2.8 of the MSHCP.

- BLM(303) Implement a program to rehab surface disturbances including the first hundred feet or so of "closed" roads and trails within proposed desert tortoise ACECs, Las Vegas bearpoppy habitat, and other areas important for special status species.

- BLM(304) Maintain and/or improve 45,750 acres of Las Vegas bearpoppy habitat in four bearpoppy management areas: **Sunrise**, Lovell Wash, Bitter Spring, and **Gold Butte**. Protect Las Vegas bearpoppy habitat within Apex land sale area in cooperation with Clark County.[1]

- BLM(15) Develop brochures, pamphlets, and interpretive signs for covered species and the habitat of which they depend...

Goals and Objectives of the Project.

Through this project, the BLM will determine where resource damage is occurring within ACECs managed by the BLM in Clark County; evaluate why it is occurring; and make management recommendations regarding actions to reduce these impacts. This will be accomplished by collecting data on condition and use of designated (non-paved) roads on BLM managed public land within Clark County and making management decisions to help reduce threats to covered species. One way to reduce threats that is included in this project will be public education.

The project goals were to:

1. To gather information on use of roads on public land in order to improve management of those public lands in Clark County;

2. To manage roads through signage to aid in proper use by public;

3. To increase public awareness regarding approved roads and proper use; and

4. To determine the effectiveness of road monitoring on BLM lands conducted by volunteers in coordination with BLM.

To achieve these goals, BLM attempted to:

[1] Emphasis added. Areas in bold are within the project scope.

1. Document road conditions;
2. Document signs, markers and kiosks along roads;
3. Repair and replace signs, markers and kiosk components when needed;
4. Document reports of illegal use and BLM's response;
5. Monitor and document use of roads (type and amount of use);
6. Monitor conditions of roads (illegal incursions, sign conditions, etc.);
7. Validate work conducted by other agencies or volunteers to determine accuracy of volunteer monitoring and suggest improvements;
8. Collect, document, and transmit data to the Clark County Desert Conservation Program (DCP);
9. Provide information to the public regarding approved roads, and proper use;
10. Design, create and install kiosks and panel signs in public areas;
11. Design, produce and distribute area maps;
12. Design, produce and post web page to a public website; and
13. Participate in community outreach events.

3. Methods and Materials

A complete description of project methods can be found in the Final Work Plan (Deliverable D04) and the Final Data Management Plan (Deliverable D05). The following is a summary of methods.

METHODS:

This project addressed use and marking of off-highway roads under the management of the BLM within Clark County. Vandalism, weatherization, inappropriate use and illegal use contribute to the existing state of the roads. The existing state of these roads, including signage and other markings, guides the future use of these roads.

This project was located on public lands managed by BLM in Clark County, Nevada within the following ACECs:

- Coyote Springs ACEC
- Gold Butte ACEC (Parts A, B and C)

- Mormon Mesa ACEC
- Piute-Eldorado ACEC
- Rainbow Gardens ACEC

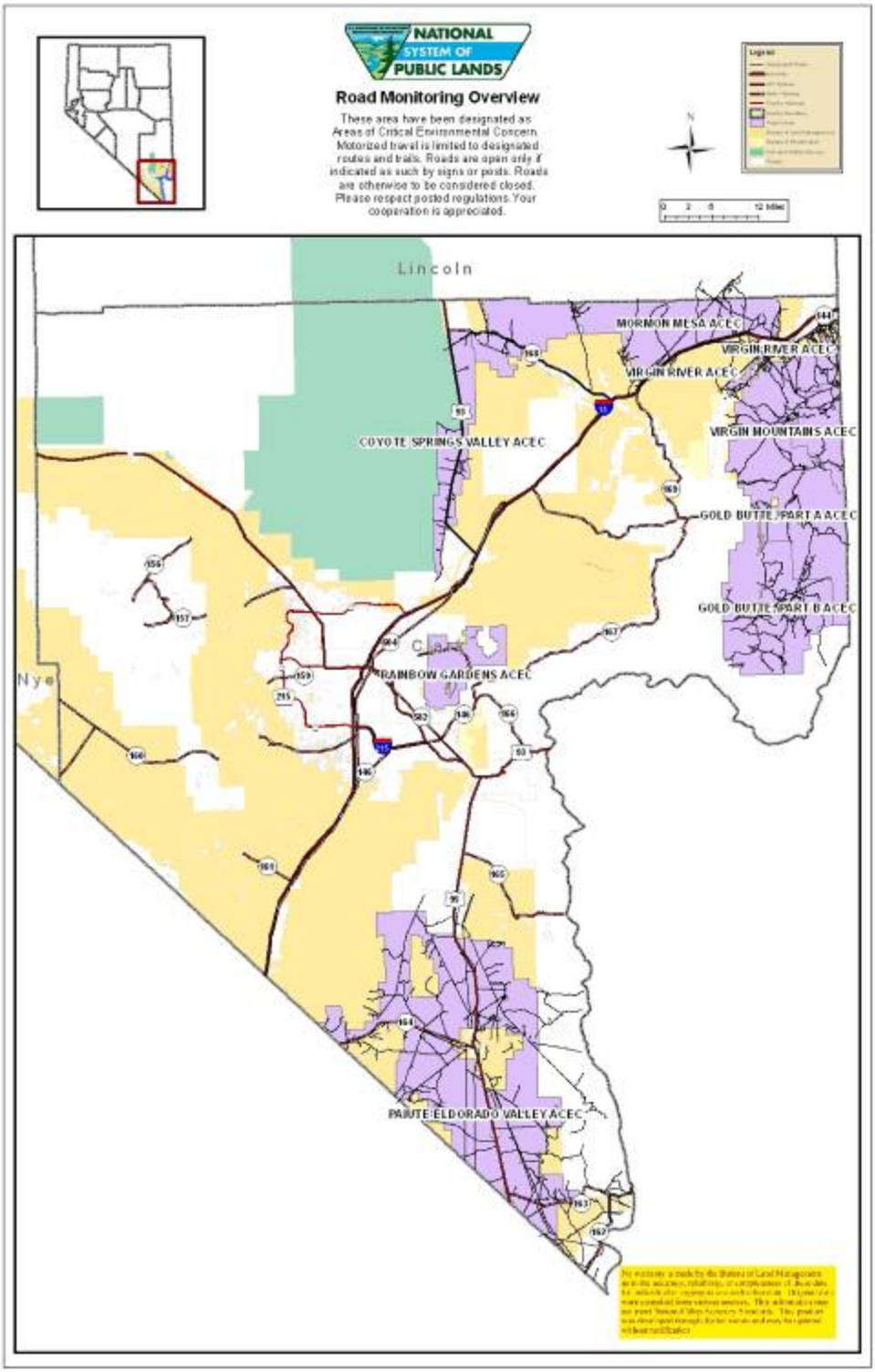

Figure 6. Road Monitoring Overview Map

Figure 7. Coyote Springs ACEC, approximately 52,000 acres with approximately 150 miles of open roads.

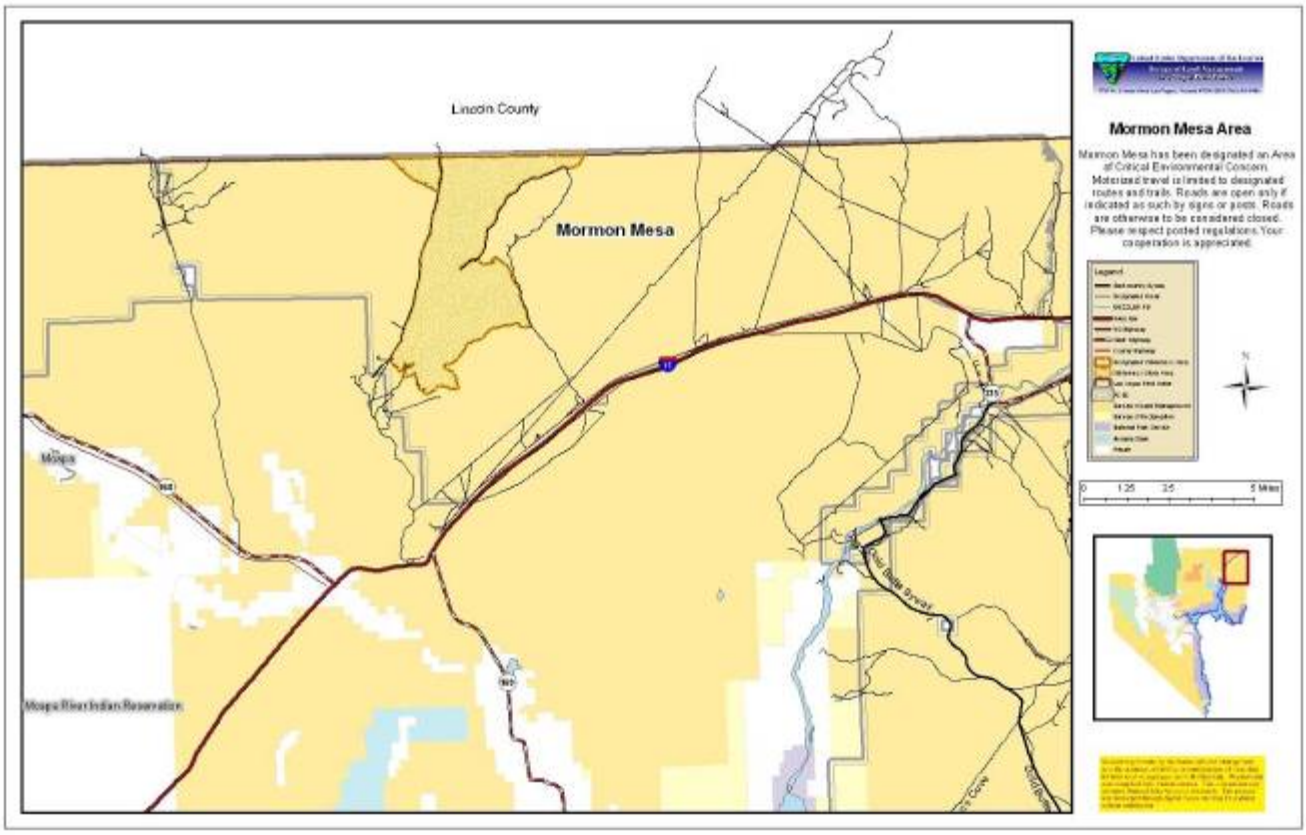

Figure 8. Mormon Mesa ACEC, approximately 148,000 acres with approximately 212 miles of open roads.

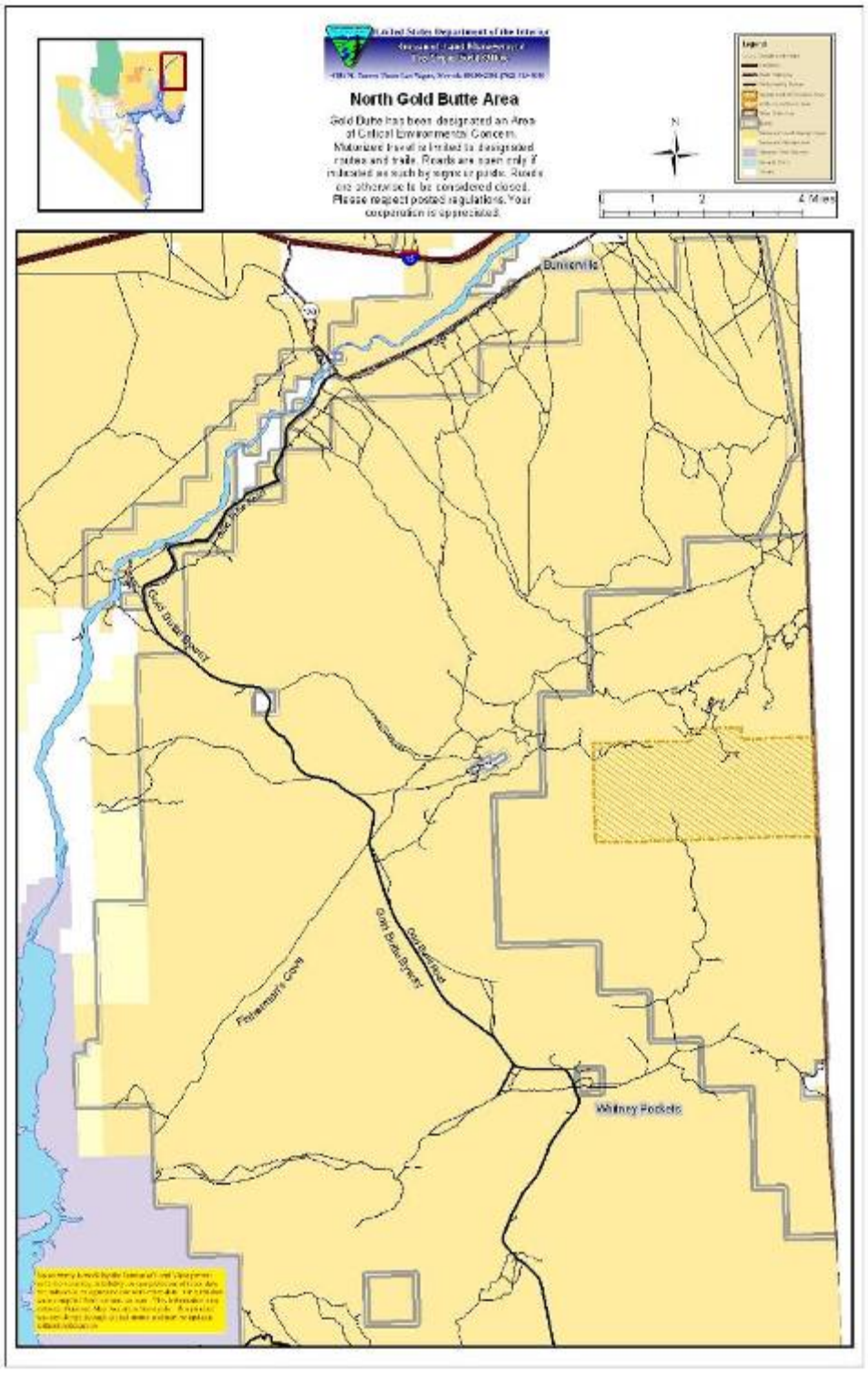

Figure 9. North Gold Butte ACEC (Part A and C), approximately 221,000 acres with approximately 366 miles of open roads.

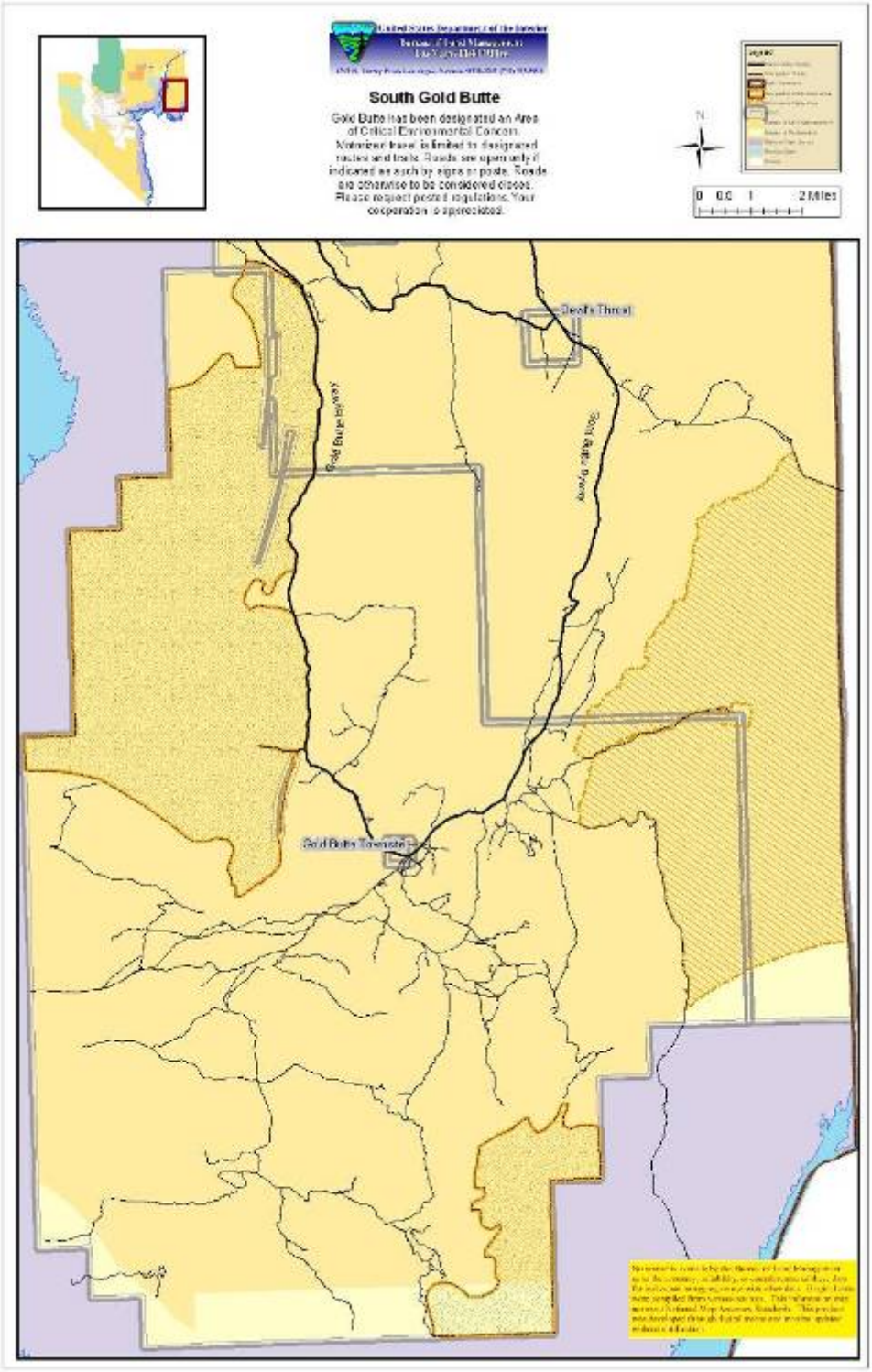

Figure 10. South Gold Butte ACEC (Part B), approximately 123,000 acres with approximately 291 miles of open roads.

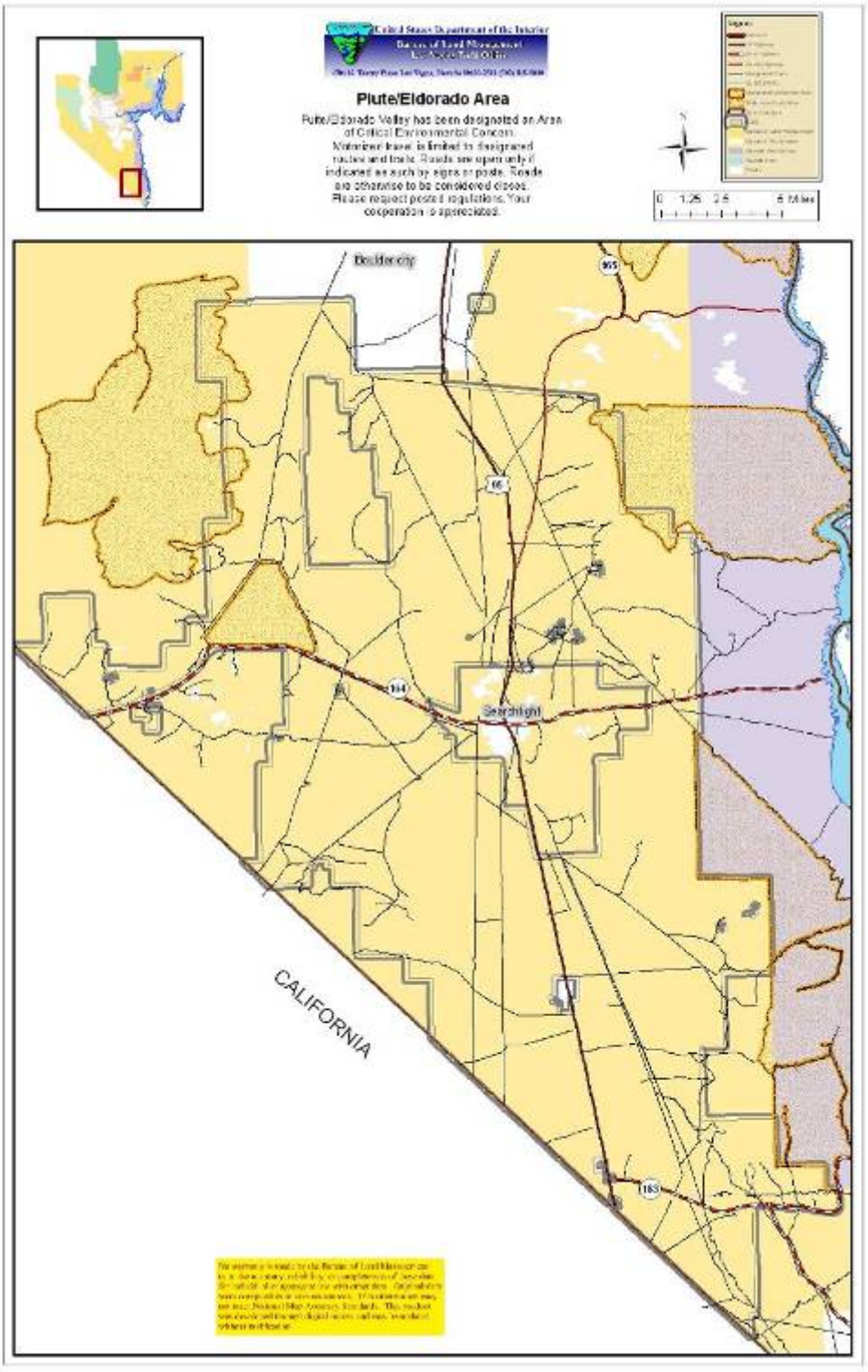

Figure 11. Piute-Eldorado ACEC, approximately 328,000 acres with approximately 828 miles of open roads.

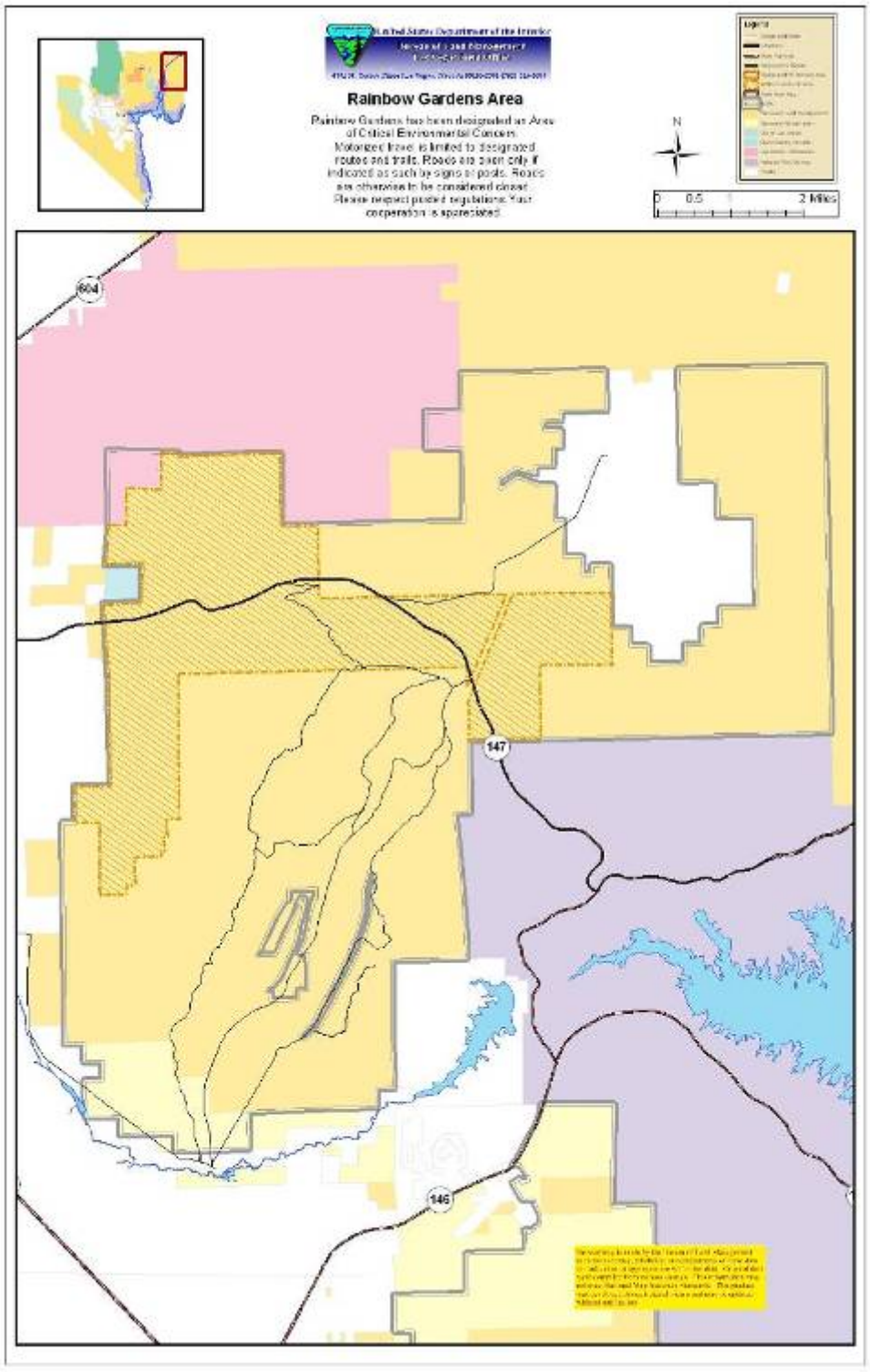

Figure 12. Rainbow Gardens ACEC, approximately 39,000 acres with approximately 70 miles of open roads.

Monitoring methods were designed to answer the following project goals:

1. To gather information on use of roads on public land in order to improve management of those public lands in Clark County;
2. To manage roads through signage to aid in proper use by public;
3. To increase public awareness regarding approved roads and proper use; and
4. To determine the effectiveness of road monitoring on BLM lands conducted by volunteers in coordination with BLM.

To meet the first goal of 'gathering information on use of roads on public lands in order to improve management of those public lands in Clark County, BLM implemented several methods for collecting data. First, a data dictionary was created by BLM and approved by the DCP to be used in the collection of data in the field via Trimble GeoExplorer GPS units. All monitors, including BLM and volunteers, were directed to use this method for documenting "Incidents" in the monitoring areas. In addition to collecting resource damage the approved data dictionary contained a point feature class to be used to document type and number of recreational activity observed. Secondly, BLM installed traffic counters in what are, presumably, high vehicle traffic areas. These counters were placed along roads which have been identified through observation and consultation as receiving relatively high use.

Data Dictionary

The data dictionary was developed for purposes of documenting and reporting resource damage, observed recreational use, and other unspecified use. In the field, during the course of monitoring, the monitor would drive and look for any resource damage and would then record the damage using the GPS unit and the filling in the required fields in the data dictionary. The data dictionary allowed for three types of feature classes to be collected:

- Point Features
- Line Features
- Polygon Features

Point Features

Point features were used to collected data at sites involving resource damage caused by recreational use, industrial/commercial use, or natural deterioration; and observed recreational use. Resource damage data was documented separately from observed recreational use data. To maximize accuracy monitors were instructed to collect a minimum of 20 positions for every point. Additionally, key fields in each feature class were required to be filled in to eliminate blank or "null" entries.

To collect resource damage data the following fields were created:

Incident Number: *The combination of the File name and specific incident number (e.g. R11021309A01)*

Disturbance: *Select from menu the type of human caused disturbance being documented*
Disturbance Description: *Short description of disturbance (e.g. ruts, extensive damage, etc.)*
Vegetation: *Select from menu vegetation type affected*
Biocrust Damage: *Identify if Biocrust was damaged/disturbed*
Erosion: *Identify if erosion is observed as a result of incident*
Compacted Soil: *Identify if compaction is observed*
Affected Soil Type: *Select from menu the soil type affected*
Fire Ring: *Number of fire rings present*
Recreation Area: *Select from menu the type of recreational use the area is likely experiencing*
Sign Condition: *Select from menu the condition of the sign, if sign damage exists (e.g. Missing)*
Sign Type: *Select from menu the type if sign affected, if sin damage exists*
Hazards: *Select from menu the type of Hazard (e.g. Washout)*
Hazard Comment: *Description of Hazard if not fully described by menu*
Point Type: *Select from menu the option that best describes the location on the road where the incident occurred.*
Water Feature: *Select from menu the type of water feature present*
Spring Affected: *Identify if a spring or spring system is affected*
Method: *Select from menu method for recording data (e.g. Digitized, GPS)*
Date Created: *Date of collection auto- filled*
Date Modified: *Date the data has been reviewed and/or incident was resolved*
Data History: *Description of any changes in status of data or Incident (e.g. Sign replaced)*

To record observed recreational uses the following fields were used:

GPS File number: *The file number auto-generated when file was created for data collecting*
Recreational Use Type: *Select from menu the type of recreational use observed*
Other: *Use to fill in the with a recreational activity not listed in the menu*
Count of Users: *Number of users per recreational activity observed*
Date Created: *Date of collection auto- filled*
Date Modified: *Date the data has been reviewed and/or incident was resolved*
Data History: *Description of any changes in status of data or Incident (e.g. Sign replaced)*

Line Features

Line features were used to record incursions or line features that were caused by recreational use, industrial/commercial use or natural deterioration. When an incursion was discovered monitors were asked to follow and record the incursion to its end. The following fields were used to collect line incidents:

Incident Number: *The combination of the File name and specific incident number (e.g. R11021309A01)*

Designated Route: *Identify the status of the road (Open or Closed)*
Disturbance: *Select from menu the type of human caused disturbance being documented*
Disturbance Description: *Short description of disturbance (e.g. ruts, extensive damage, etc.)*
Route Type: *Select from menu the type of route created or existing (e.g. Unimproved, Improved)*
Suitability: *Select from menu the vehicle the route created is best suited for.*
Condition: *Select from menu the condition of the road if the incident is a Road Hazard*
Hazard: *Select from menu the type of Hazard (e.g. Washout)*
Hazard Description: *Description of Hazard if not fully described by menu*
Road Width: *Road width*
Units: *Unit of measurement used to determine Road Width*
Trail Class: *Select from menu the trail class (default selection is Primitive/Undeveloped)*
Vegetation Type: *Select from menu vegetation type affected*
Bio crust Damage: *Identify if Biocrust was damaged/disturbed*
Erosion: *Identify if erosion is observed as a result of incident*
Compacted Soil: *Identify if compaction is observed*
Affected Soil Type: *Select from menu the soil type affected*
Spring Affected: *Identify if a spring or any part of a spring system is affected*
Trail Number: *Record trail number if on exist*
Trail Name: *Record the trail name if on exist*
Method: *Select from menu method for recording data (e.g. Digitized, GPS)*
Agency: *Select from menu the Agency collecting or being collected for*
Right of Way: *Select from menu the type of right of way, if any (default selection is OTHER)*
County: *Select from menu the county in which the data is being collected*
State: *Select from menu the State in which the data is being collected*
Date Created: *Date of collection aut- filled*
Date Modified: *Date the data has been reviewed and/or incident was resolved*
Data History: *Description of any changes in status of data or Incident (e.g. Sign replaced)*

Polygon/Area features

At sites were large area have been disturbed or affected, and line or point features could not adequately record the site, polygon features were used. This included burn areas, parking areas and large camping areas. The following fields were used to collect area incidents:

Incident: *The combination of the File name and specific incident number (e.g. R11021309A01)*
Area Type: *Select from menu the type of area affected that best describes the incident site*
Comment: *Short description of disturbance (e.g. ruts, extensive damage, etc.)*
Disturbance: *Select from menu the type of human caused disturbance being documented*
Vegetation: *Select from menu vegetation type affected*
Biocrust Damage: *Identify if Biocrust was damaged/disturbed*
Erosion: *Identify if erosion is observed as a result of incident*

Compacted Soil: *Identify if compaction is observed*
Affected Soil Type: *Select from menu the soil type affected*
Spring Affected: *Identify if a spring or any part of a spring system is affected*
Use Level: *Select from menu the perceived degree of use to area (e.g. High, Moderate, Light)*
Date Created: *Date of collection aut- filled*
Date Modified: *Date the data has been reviewed and/or incident was resolved*
Data History: *Description of any changes in status of data or Incident (e.g. Sign replaced)*

A minimum of 156 site visits to the Area(s) of Critical Environmental Concern (ACEC) were conducted in accordance with the table below:

Table 1. Table One - Minimum Number of Site Visits to the ACECs

Time Period	Minimum number of site visits (Total)	Min # which must be conducted at Rainbow Gardens	Min # which must be conducted at Mormon Mesa	Min # which must be conducted at No. Gold Butte (Part A)	Min # which must be conducted at So. Gold Butte (Part B)	Min # which must be conducted at Coyote Springs	Min # which must be conducted at Piute/Eldorado
April 1, 2010 – June 30, 2010	24	3	1	1	1	1	1
July 1, 2010 – September 30, 2010	24	3	1	1	1	1	1
October 1, 2010 - December 30, 2010	24	3	1	1	1	1	1
January 1, 2011 - March 30, 2011	24	3	1	1	1	1	1
April 1, 2011 – June 30, 2011	24	3	1	1	1	1	1
July 1, 2011 - September 30, 2011	24	3	1	1	1	1	1
October 1, 2011 - November 15, 2011	12	1	1	1	1	1	1

BLM complied with the work plan and the data management plan, once submitted and approved, during these site monitoring visits.

Traffic Counters

A second method used to gather data regarding use of public lands, within the scope of this project, was the installation of traffic counters along roads with relatively high use. Traffic counters allowed the BLM to gather data on the amount of use in certain areas where no such quantifiable data was available. Counters were supplied by the Trafx Research Ltd. Trafx counters operate using a magnetometer and software that allows for the counter to be installed in the ground and out of sight as well as out of the way of traffic. Once installed, counters begin counting individual passes by vehicles of all sizes and can be programmed to divide the total number in half for roads that serve as the ingress and egress to an area. Additionally, counter settings can be adjusted to compensate for factors such as road width, vehicle type targeted, and date/time stamping. Eleven counters were installed throughout the project area where use was deemed to be relatively high and quantifiable data of this nature was crucial for future planning and management of the area. Location of counters is detailed below:

Signs

To meet the second goal, BLM shall provide the public with information regarding legal desert activities and designated roads. Eight kiosks and ten single panel signs shall be developed and installed, in accordance with the sign plan (See section H, 10), once submitted and accepted. An open roads map for Coyote Springs, Gold Butte (including Parts A, B, and C and the Virgin River ACEC), Mormon Mesa, and Piute-Eldorado shall be developed and available to the public at locations such as the BLM office, at outreach events, etc. BLM shall also develop a webpage for publication on the BLM's Southern Nevada District website with specific roads information for the public.

Public Outreach

The third goal, to increase public awareness regarding approved roads and proper use, was addressed by actively engaging the local and rural communities in several venues. During the term of this agreement attended and participated in several public outreach events. BLM chose these particular events for their potential impact and effectiveness due to the number and caliber of attendees. Attendees included Town Board members, community leaders, organization leaders and other members of the public.

Volunteers

'Volunteer Effectiveness' was determined through validating the accuracy of data provided by volunteers on site visits and GIS data quality reviews. All data received from volunteers, regardless of format, will be validated and subsequently utilized to monitor road conditions. Data that does not meet standards or was collected using methods not approved for this project will be recollected by BLM using approved methods.

BLM made formal agreements with volunteers groups, such as PIC, to collect data using approved methods and data standards. These groups used the Data Dictionary approved by the DCP in accordance with the methods outlined in the project's approved Final Data Management

Plan and completed the monitoring of a predetermined amount of roads for the duration of their agreement.

Formal volunteer groups were responsible for the recruiting, assigning and training of volunteers as well as the collection and transfer of data to meet BLM standards. To ensure that performance and data collection standards are met, BLM received data transfers from these groups on a biweekly basis. This regular transfer of data helped BLM to QA/QC data more efficiently and determine which areas have or have not been monitored within a given quarter. Additionally, if deficiencies in data or performance were discovered to be a regular occurrence, BLM arranged for further training of volunteers through the volunteers group's Project Manager. These training sessions were held at a yet undetermined location and were addressed to large groups of volunteers.

BLM also received information on road condition and use by the public without a formal agreement. These volunteers had no obligation to either report incidents or collect data using any approved methods. Information regarding roads or resource damage were conveyed to BLM at their discretion. Any information received in this fashion required, at minimum, the location of the incident and the type of incident to be used in this project.

Description of Deliverables and Milestones

1. Contract Award and Mobilization.

2. Project Kick-off Meeting. This meeting was conducted within thirty (30) calendar days after AGREEMENT award. BLM Project Manager attended.

3. Quarterly Progress Reports. These reports were submitted to COUNTY on or before January 1, April 1, July 1, and October 1 of each calendar year for the term of this AGREEMENT. The format is provided on the following website: http://www.accessclarkcounty.com/depts/daqem/epd/dcp/Pages/dcp_forms.aspx document title "DCP Quarterly Report Format".

   COUNTY reserved the right to edit these reports for grammar and accuracy for posting to a public website.

4. Draft and Final Work Plan with Area Maps. BLM submited a draft and final work plan for project. BLM provided a map of the entire Clark County with the project areas identified as well as a more detailed map of each project area.

   Work Plan included (at a minimum) the following sections:

a. Project Staffing, Roles and Responsibilities: describe who will be working on the project, their positions, roles and responsibilities; state how staff will be assigned, re-assigned, hired to fill vacancies;
b. Volunteer Plan: describe how volunteers will be recruited, trained, managed, utilized and supervised;
c. Work Plan and Data Management Plan: describe who will work on and complete the work and reports, their dates of service and the expectations of their work;
d. Coordination: describe how BLM shall coordinate with Clark County, NPS, subcontractors and other agencies. Describe how coordination will be handled, timelines and how timelines will be met;
e. Essential Equipment, Supplies, Software and Facilities: List essential equipment, supplies, etc. Explain how and when they will be obtained, what training will be obtained for equipment;
f. Project Activities and Methods: describe the specific activities that must take place to ensure the project is completed;
g. Communication and coordination procedures between BLM and DCP, between BLM and volunteers; and
h. Additional sections to the work plan shall be added by BLM as necessary.

5. Draft and Final Data Management Plan This plan was submitted using the guidelines provided in the Data Management Guidelines located on the following website: http://www.accessclarkcounty.com/depts/daqem/epd/dcp/Pages/dcp_forms.aspx document title "DCP Data Management Guidelines".

   This plan included a description of quality assurance and quality control (QA/QC) procedures for all data.

   The Data Management Plan included (at a minimum) the following sections:

   a. Introduction;
   b. **Section 1**: Data Collection: describe data collection procedures, data management methods, processes to be used to insure the accuracy and quality of the data, and the transfer of the data and its associated metadata to the COUNTY. Describe how quality of data will be ensured and how BLM shall follow the DCP standards and guidelines. Describe in detail the data that will be collected for this MSHCP project and the methods that will be used. Please be specific and cite references where appropriate;
   c. Project Location: describe the project locations including coordinates representing the southwest and northeast corners of the project areas;

d. Spatial Data: describe Global Positioning System (GPS) units that will be used and how they will be setup according to certain parameters to ensure the highest quality data is being collected;
e. Aspatial Data: describe aspatial data that will be submitted and how this data will be collected and monitored;
f. Existing Data: list existing data that will be used in this project, including appropriate citations.
g. Data Dictionary: describe the data dictionary that will be used for this project;
h. **Section 2:** Data Management: describe the methods that you will be using to manage data for this project;
i. Spatial Data: describe how spatial data will be stored;
j. Tabular Data: describe how use of tabular data will be stored;
k. Metadata: describe how all spatial data and databases will be compliant with Federal Geographic data Committee (FGDC) guidelines;
l. **Section 3:** Data Accuracy and Quality: Describe the processes to be used in ensuring the accuracy and quality of the project data, commonly referred to as Quality Assurance and Quality Control (QA/QC);
m. **Section 4**: Transfer of Data and Metadata: describe how the transfer of data, reports, and maps (including electronic copies of completed paper data sheets, field notes, and electronic databases generated from paper data sheets) produced during the project will be submitted to the DCP;
n. Time Period: describe the frequency that all data and information will be submitted to the DCP;
o. Format: describe format that all data and information will be submitted to the DCP;
p. **Appendix A** - GPS Standards: detail the equipment set up parameters for the GPS unit(s) that will be used for this project; and
q. **Appendix B** - Data Dictionary: create and detail the data dictionary that will be used for this project.

Data files submitted to COUNTY shall include:

a. ArcGIS shape files that includes the attributes file;
b. A .pdf file of the handwritten log sheets (a handwritten log of work each day will be kept)

6. Trial Data Collection and DataTransfer. BLM defined a trial project area, collected sample data and transmited data to COUNTY. The intent of this deliverable was to ensure that BLM's equipment and the data transfer process were working correctly.

7. Draft and Final GIS Delivery of Baseline Conditions. BLM provided the following three (3) GIS data layers in the format described in the approved Data Management Plan deliverable for this project, or per Section I, Document Submittal, of this Scope of Work:

    a. Corrected locations for RS-2477 claim roads within the ACECs;
    b. Existing sign locations within the ACECs;
    c. Designated roads within ACECs; and
    d. Current incursions documented within one mile outside the ACEC boundaries.

8. Site Monitoring Visits. BLM conduct edsite visits as defined in Section F, Project Methods and to be further defined in the Work Plan deliverable, once submitted and approved. The following activities were conducted during and in conjunction with site monitoring visits, unless otherwise agreed upon in writing by both parties:

    a. Install and maintain signs.
    b. Investigate and validate reports of road and sign condition issues and habitat damage caused by vehicles provided by volunteers, BLM personnel and the general public
    c. Document (GPS) site conditions including:
        1. New incursions;
        2. Sign status;
        3. Road condition;
        4. Dumpsites;
        5. Visitor use areas;
        6. High use areas; and
        7. Uncontrolled use areas (unauthorized free play areas)
        8. Coordination with restoration and desert clean-up programs.
    d. Make management decisions to respond to new incursions, dump sites, declining road conditions, and/or uncontrolled use.

9. Monitoring Summary Reports. BLM delivered one monitoring report each quarter (including the partial quarter), for a total of seven (7) monitoring reports, which summarized activities performed under this AGREEMENT. Reports addressed all activities outlined in the site monitoring visit deliverable and included work completed; number of miles driven; miles of roads monitored; road conditions; signs, markers and kiosks installed or maintained along roads; observed public use of roads; accuracy of volunteer observations and recommendations for improvements; and locations and types of illegal use documented, and the BLM response. When reporting on monitoring and coordination of volunteer activities, report included an evaluation of the effectiveness of the coordination, any problems encountered with information provided by volunteers and an analysis of how those problems could be eliminated.

10. Draft and Final Sign Plan. This report outlined key messages to be used in the educational materials for the web and educational kiosks. The messages included the purpose of the ACEC, rules and regulations of behavior, and resources of the area.

11. NEPA for Interpretive Signing. BLM developed appropriate National Environmental Policy Act of 1969 (NEPA) documentation for installation of interpretive signing (8 kiosks and 10 single panel signs). The NEPA document identified proposed and alternative locations where interpretive signs might be installed.

12. Draft Text and Kiosk Design for 8 Kiosks. BLM provided draft text, design and proposed location sites for kiosks prior to BLM's purchase and installation of kiosks.

13. Final Text and Installation of 8 Kiosks. BLM provided final text, design, location sites and photos of each kiosk upon installation at its designated location.

14. Draft Text for 10 Single Panel Signs. BLM developed draft text, proposed location sites and provided ten signs containing the key messages to improve the public's awareness of the designated routes prior to BLM's purchase and installation of signs.

15. Final Text and Installation of 10 Single Panel Signs. BLM provided final text, design, location sites and photos of each sign upon installation at its designated location.

16. Draft and Final ACEC Open Roads Maps. BLM developed maps of the following ACECs depicting the designated open roads: Coyote Springs, Gold Butte (including Parts A, B, and C and the Virgin River ACEC), Mormon Mesa, and Piute/Eldorado. These maps were made available to the public at locations such as the BLM office, at outreach events, etc.

17. Draft and Final Web Page. BLM developed a webpage on the Southern Nevada District website to provide the public with an explanation of the road designations, rules and regulations in the ACECs, an explanation of the road signs and what they mean, and BLM standard responses to resource damage (i.e., restoration).

18. Outreach Event. BLM participated in six (6) community outreach events or town board visits to update the community on the road monitoring effort. BLM provided County with documentation of each event including date, time, location, length, approximate number of attendees, BLM representatives in attendance, and brief summary of event.

19. Draft and Final Brochures. BLM developed a minimum of three distinctive brochures to distribute to the public providing information on responsible desert use, legal activities and open areas. A minimum of 750 of each brochure will be produced and distributed to potential desert users.

20. Receipt Submittal. Receipts for any and all equipment purchase(s) with an individual purchase price of $5,000 or more shall be submitted with any invoices. If items are valued at $5,000 or more but less than $5,000 of COUNTY funds are used, receipts shall be provided as well as proof of matching funds.

21. Written and Oral Reports. Written and oral reports were to be provided to the Clark County Desert Conservation Program upon request.

22. Biennium Progress Summary and Final Biennium Progress Summary Report. This report shall be submitted on June 30th of each odd-numbered year and at the completion of the project. The report format is provided on the following website: http://www.accessclarkcounty.com/depts/daqem/epd/dcp/Pages/dcp_forms.aspx document title "DCP Biennium Summary Report Format".

23. Annual Project Review Presentation. BLM prepared and presented an Annual Project Review Presentation to representatives of the MSHCP's Adaptive Management Program in each year of the AGREEMENT term, if requested. Dates and locations were determined by COUNTY. The format for the annual project review presentation is a 20-minute oral presentation that contains the following information:
    a. Title of project,
    b. A brief summary of the project's goals and approach,
    c. A cumulative summary of the progress on your project to date, which you may craft using the materials you have already submitted to the Desert Conservation Program in your previous quarterly reports, and
    d. A brief summary of the work plan for the remainder of the project, discussing any changes in approach that have been adopted to address issues or barriers to progress.

    Copies of all presentations materials were provided to the COUNTY prior to the start of the presentation.

24. Annual and Final Project Data. GIS data and aspatial project data were submitted in the format described in the approved Data Management Plan deliverable for this project, or per Section I, Document Submittal, of this Scope of Work.

25. Final Project Report. This report was submitted at the completion of the project in the format provided on the following website: http://www.accessclarkcounty.com/depts/daqem/epd/dcp/Pages/dcp_forms.aspx document title "DCP Final Report Format".

26. Final Project Review Summary Form. This form was submitted at the completion of the project in the format provided on the following website:

http://www.accessclarkcounty.com/depts/daqem/epd/dcp/Pages/dcp_forms.aspx document title “DCP Final Project Review Summary Format”.

MATERIALS:

Equipment

- Trimble GPS units
- Digital cameras
- All terrain vehicles (ATV)
- Trailer for ATVs
- Four-wheel drive high clearance vehicle
- Traffic counters
- Personal computers
- Office (chairs, shelves, desk, drawers) at the BLM office: 470 North Torrey Pines Drive, Las Vegas, NV
- Field radios
- Carsonite post pounders
- Pilot hole drivers
- Miscellaneous tools (drills, hammers, shovels, etc.)

Software

- Pathfinder Office (current version 4.10)
- ArcGIS Suite (current version 9.3)
- Microsoft Office Professional Suite
- Microsoft Project
- Communiqué
- Adobe Acrobat Professional
- Adobe Illustrator of equivalent graphic design software

Supplies

- Carsonite posts
- Carsonite post signs
- Eight (8) kiosks
- Ten (10) panels signs, posts and hardware
- Brochures
- Maps
- Fuel
- Miscellaneous office supplies

4. Results and Evidence of the Results

BLM completed all deliverables and milestones for the project. Monitoring observations are documented under Milestones M03, M04, M05, M06, M07 and M08 below**.**

SITE MONITORING VISITS:

Milestones M03, M04, M05, M06, M07 and M08 and Deliverable D46

Roads monitoring on BLM managed, non-paved roads was conducted within six ACECs in Clark County, NV. These included Rainbow Gardens, Mormon Mesa, Gold Butte Part A, Gold Butte Part B, Coyote Springs, and Piute/Eldorado. The following table details the total actual count of site visits per ACEC during the term of the agreement. Site visits included visits to sites/locations recorded by volunteers for the purposes of validating data and/or to resolve or plan for the resolution of reported incidents of resource damage. Other site visits included visits to site with agency boundary issues, to supervise or assist in restoration efforts, and to validate reports of resource damage by other groups or individuals not using this method of collecting resource damage data.

Table 2 Actual Site Visits Conducted

	Apr-Jun 2010	Jul-Sept 2010	Oct-Dec 2010	Jan-Mar 2011	Apr-Jun 2011	Jul-Sept 2011	Oct-Nov 2011	Total
Gold Butte North (Part A)	3	4	6	6	7	10	3	**39**
Gold Butte South (Part B)	2	4	0	9	3	4	2	**24**
Mormon Mesa	2	3	6	3	3	4	1	**22**
Coyote Springs	9	5	6	3	7	3	1	**34**
Rainbow Gardens	8	5	4	2	4	3	1	**27**
Piute/Eldorado	3	5	2	3	4	2	4	**23**
Total	**27**	**26**	**24**	**26**	**28**	**26**	**12**	**169**

Goal 1

The results of data collected using data dictionary, for all monitoring in the project area, are as follows:

- Point features
    - Incidents: 561
    - Recreational Observations: 164
- Line Features
    - Incidents: 163
- Area Features
    - Incidents: 70
- Total Incidents: 794 (note: excludes Recreation Use Observations)

Each ACEC within the scope of this project has its own unique qualities that make it stand out from the others. Just the same, each ACEC has its own set of issues to be addressed. The project area was divided into separate monitoring areas to attempt to capture those differences along with the responses to the different challenges. Those areas were Gold Butte Part A (North), Gold Butte Part B (South), Mormon Mesa, Coyote Springs, Rainbow Gardens, and Piute/Eldorado. These six areas of monitoring were analyzed separately to better tailor and prioritize BLMs responses to incidents. This project will not be evaluating the effectiveness of individual types of restoration treatments but will quantify responses to reported incidents as a whole. For this

project, BLM responses were categorized as either MITIGATED, PENDING, or NO ACTION. Mitigated is the status of incidents that received some kind of intervention or treatment. Pending is the status of incidents whose field visit or response is pending but whose data has been reviewed. No Action is the status of incidents that have been reviewed and validated but deemed to pose no significant threat or present with no significant resource damage.

Although not all incidents were validated in the field they all received some review and level of validation. Those that did receive a BLM response received any of several levels and types of response. The type of response is predicated on various factors including, but not limited to, the potential effectiveness of the response, availability of resources and site characteristics, and urgency of response. Where one site may benefit by simply having the tracks swept another may benefit from having vertical mulch treatment applied. The effectiveness of a treatment varies from site to site but it is assumed that any response is better than no response in order to reduce the threat of further resource damage.

Gold Butte Part A (north)

This part of Gold Butte includes popular destinations like Whitney Pockets, Falling Man, Black Butte and the Virgin Mountains. The set of challenges in this area are largely tied to vandalism and OHV use.

Monitoring efforts in this area resulted in 132 incidents being documented. These include:

- 106 Point features
- 30 Line features
- 23 Area features

Monitors collected all three forms of features classes in this area. The following tables represent the types of incidents documented and the category of response.

Point Features

Table 3. Point Features for Gold Butte Part A (North)

	Mitigated	Pending	No Action
Two track	20%	60%	20%
Burn Area	0%	100%	0%
Denuded	8%	42%	50%
Dumping w/o Tires	33%	0%	67%
Dumping w Tires	0%	0%	100%
Graffiti	0%	100%	0%
Hazmat	100%	0%	0%
Hill Climb	0%	100%	0%
Motorcycle	0%	100%	0%
N/A	17%	26%	57%
Other	14%	29%	57%
Shooting Area	0%	100%	0%
Shooting Area w Trash	0%	100%	0%
Sign Damage	64%	25%	11%

Point Feature totals (106 points):

- 27% (29 points) Mitigated
- 36% (38 points) Pending
- 37% (39 points) No Action

Collectively, 64% of all point incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. It was found that the most common type of incident documented was Sign Damage, making up 26.4% of all incidents for this area. Denuded areas made up 22.6% of all incidents documented. Denuded areas include large staging area, parking areas, campsites and burn areas. “N/A” incidents, which include naturally occurring resource damage (e.g. washouts, erosion), special landscape features, and non-impacted recreation sites, constituted 22% of all incidents documented.

Line Features

Table 4. Line Features for Gold Butte Part A (North)

	Mitigated	Pending	No Action
2 Track	35%	52%	13%
Hill Climb	0%	100%	0%
N/A	0%	75%	25%
OHV Play Area	0%	100%	0%

Line Feature totals (30 lines)

- 27% (8 lines) Mitigated
- 60% (18 lines) Pending
- 13% (4 lines) No Action

Line features captured incidents with the most potential to cause severe resource damage this is due, in part, to its tendency for repeated use through a large portion of landscape. Unlike points and areas that provide for relatively static recreation once created, line features provide a dynamic component which allows for locomotion through large portions of habitat increasing the chances of encounters with covered species. Additionally, the creation of this type of resource damage has a larger cumulative impact to habitats through direct mortality of covered species and damage to associated habitats. These types of incidents receive a high priority when deemed to be a significant threat.

Collectively, 40% of all line incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. “2 Track” incidents made up 77% of all line incidents documented. “N/A” incidents, in this case consisting of pedestrian trails, made up 13% of all incidents. A total of 5.05 miles of new incursions were documented during the term of this project. Due to the labor intensity required for the mitigation of some of these incidents response may be delayed pending availability of BLM resources.

A further breakdown of the data confirmed suspicions of the pervasiveness of OHV use in the area. Data shows that 50% of incidents documented were caused by the use of ATV/UTVs. 40% was the result of 4WD use. Only 13% of incidents were attributed to pedestrian use. To determine the cause of damage at a site monitors simply have to look for the evidence on the ground (e.g. tracks, track width, road characteristics and suitability).

Area Features

Table 5. Area Features for Gold Butte Part A (North)

	Mitigated	Pending	No Action
2 Track	0%	0%	100%
Denuded	22%	39%	39%
N/A	0%	50%	50%

Area Feature Totals (23 Polygons)

- 17% (4 Polygons) Mitigated
- 40% (9 Polygons) Pending
- 43% (10 Polygons) No Action

Collectively, 60% of all area incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. Total acreage documented for this aera was 5.3 acres. “Denuded” areas made up 78% of all the incidents documented. This included staging areas, parking areas, and campsites with noticeable resource damage. “N/A” incidents, including camping areas with little resource damage, made up 18% of all incidents recorded. Due to the continued use of many of these sites a no action response was determined. Although resource damage existed in large proportions, feedback from community members indicates that the restoration of these established sites may be in vain. A large number of them have existed for many years and have received continued and regular use. BLM will monitor for growth and evaluate the need for response in the future.

Recreational Observations

Table 6. Recreational Use in Gold Butte Part A (North)

	Percent of Total Use	Number of individual users
2 WD	21.4%	35
4 WD	18.3%	26
RV	18.3%	25
4 WD(Modified)	1%	1
ATV/UTV	24.4%	56
Bicycle	1%	1
Camping	6.1%	8
Motorcycle	3.1%	3
Pedestrian	3.1%	9
Other	5.1%	9

A total of 98 observational point features were collected in this area. ATV/UTV use constitutes the majority of use observed followed by 2 wheel drive vehicles. These results, again, strengthens the assumption that ATV/UTV use is pervasive in the area. It also depicts a growing number of non-OHV visitors to the area.

Gold Butte Part B (South)

This part of Gold Butte contains popular destination areas such as Devil's Throat, Gold Butte town, Grapevine Spring, and Lime Canyon. This portion of Gold Butte is also the most remote and rugged consisting of a variety of Buttes, peaks and ridges. Here you'll find a more dense covering of Joshua Trees, Pinyon and Juniper. Washes are more densely populated by Catclaw Acacia. Here, access is restricted almost entirely by the landscape. OHV is the most reliable way to navigate the area.

Monitoring efforts in this area resulted in 140 incidents being documented. These include:

- 124 Point Features
- 13 Line Features
- 3 Area Features

Monitors collected all three forms of features classes in this area. The following tables represent the types of incidents documented and the category of response.

Point Features

Table 7. Point Features for Gold Butte Part B (South)

	Mitigated	Pending	No Action
2 Track	64%	7%	29%
Denuded	13%	25%	62%
Dump w/o Tires	50%	50%	0%
Dump w Tires	100%	0%	0%
Fence Damage	93%	0%	7%
Hill Climb	100%	0%	0%
N/A	13%	75%	12%
Other	0%	14%	86%
Sign Damage	37%	52%	11%

Point Feature Total (124 Points)

- 35% (44 Points) Mitigated
- 36% (45 Points) Pending
- 29% (35 Points) No Action

Collectively, 63.6% of all point incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. Sign damage made up 30.6% of all point incidents documented. “N/A” incidents made up 19.3% of all point documented. This included Road hazards, recreation areas, springs and closed routes. Other, including, campsites and weeds, made up 17% of the points documented.

Line Features

Table 8. Line Features for Gold Butte Part B (North)

	Mitigated	Pending	No Action
2 Track	77%	23%	0%

Line Feature Total (13 Lines)

- 77% (10 Lines) Mitigated
- 33% (3 Lines) Pending

Line features captured incidents with the most potential to cause severe resource damage this is due, in part, to its tendency for repeated use through a large portion of landscape. Unlike points and areas that provide for relatively static recreation once created, line features provide a dynamic component which allows for locomotion through large portions of habitat increasing the chances of encounters with covered species. Additionally, the creation of this type of resource damage has a larger cumulative impact to habitats through direct mortality of covered species and damage to associated habitats. These types of incidents receive a high priority when deemed to be a significant threat.

Collectively, 77% of all line incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. All incidents in this area were 2 track incursions. A total of 8.9 miles of new incursions were documented. Data showed that 5 of those miles were in washes.

A further breakdown of the data shows that a substantial portion of the documented resource damage, 46%, was caused by ATV/UTVs. High Clearance vehicles are suspected of 30% of resource damage. To determine the cause of damage at a site monitors simply have to look for the evidence on the ground (e.g. tracks, track width, road characteristics and suitability).

Area Features

Table 9. Area Features for Gold Butte Part B (North)

	Mitigated	**Pending**	**No Action**
Denuded	0%	0%	100%

Area features Total (3 Polygons)

- 100% (3 Polygons) No Action

All, 100%, of all area incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. Incidents included campsites with no significant resource damage and the location of a corral. The total area documented for this area was 0.23 acres. It was determined that no action was needed for these incidents. Resource damage is minimal and, in the case of the campsites, a result of casual use.

Recreational Observations

Table 10. Recreational Use for Gold Butte Part B (South)

	Percentage of Total	Number of Individual Users
2 WD	17%	2
4 WD	25%	4
4 WD(modified)	8%	3
ATV/UTV	34%	13
Camping	8%	2
Motorcycle	8%	2

A total of 12 observational point features were collected in this area. ATV/UTV use constitutes the majority of use observed followed by 4 wheel drive vehicles. These results, again, strengthens the assumption that ATV/UTV use is pervasive in the area. It also reflects the type of terrain in the area compared to its northern counterpart were the use of 2 wheel drive vehicles is common.

Mormon Mesa

Mormon Mesa is a large ACEC dominated by a flat landscape and a series of washes. The dominant plant community here is Mojave Scrub with patches of Joshua Tree and Black Brush. Use here was suspected to be low impact with a relatively low visitation rate. Bordered on the south by Interstate 15 and the Mormon Mountains on the north this area offers great habitat for some covered species and a spectacular view of the Mormon Mountains and the town of Logandale, NV.

Monitoring efforts in this area resulted in 160 incidents being documented. These include:

- 134 Point Features
- 7 Line Features
- 19 Area Features

Monitors collected all three forms of features classes in this area. The following tables represent the types of incidents documented and the category of response.

Point Features

Table 11. Point Features for Mormon Mesa

	Mitigated	Pending	No Action
2 Track	0%	9%	91%
Burn Area	0%	50%	50%
Denuded	0%	0%	100%
Dump w/o Tires	16%	63%	21%
Dump w Tires	25%	75%	0%
Fence Damage	100%	0%	0%
Graffiti	0%	100%	0%
N/A	10%	34%	56%
Other	0%	20%	80%
Shooting Area w Trash	100%	0%	0%
Sign Damage	55%	40%	5%

Point Features Total (134)

- 27% (36 Points) Mitigated
- 36.5% (49 Points) Pending
- 36.5% (49 Points) No Action

Collectively, 63.5% of all point incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. It was found that the most common type of incident documented was Sign Damage, making up 35% of all incidents for this area. “N/A” incidents, which include naturally occurring resource damage (e.g. washouts, erosion), special landscape features, and non-impacted recreation sites, constituted 24% of all incidents documented. Incidents of Dumping without Tires made up 14.2 % of all point incidents in the area. Denuded areas made up 8% of all incidents documented. Denuded areas include large staging area, parking areas, campsites and burn areas.

Line Features

Table 12. Line Features for Mormon Mesa

	Mitigated	Pending	No Action

2 Track	14%	72%	14%

Line Features Total (7)

- 14% (1 Line) Mitigated
- 72% (5 Lines) Pending
- 14% (1 Line) No Action

Line features captured incidents with the most potential to cause severe resource damage this is due, in part, to its tendency for repeated use through a large portion of landscape. Unlike points and areas that provide for relatively static recreation once created, line features provide a dynamic component which allows for locomotion through large portions of habitat increasing the chances of encounters with covered species. Additionally, the creation of this type of resource damage has a larger cumulative impact to habitats through direct mortality of covered species and damage to associated habitats. These types of incidents receive a high priority when deemed to be a significant threat.

Collectively, 28%% of all line incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. All incidents in this area were 2 track incursions. A total of 9.24 miles of new incursions were documented.

A further breakdown of the data shows that a substantial portion of the documented resource damage, 57%, was caused by ATV/UTVs. High Clearance vehicles are suspected of 29% of resource damage. To determine the cause of damage at a site monitors simply have to look for the evidence on the ground (e.g. tracks, track width, road characteristics and trail suitability).

Area Features

Table 13. Area Features for Mormon Mesa

	Mitigated	**Pending**	**No Action**
2 Track	20%	20%	60%
Burn Area	0%	0%	100%
Denuded	9%	27%	64%
Other	0%	50%	50%

Area Features Total (19 Polygons)

- 11% (2 Polygons) Mitigated
- 26% (5 Polygons) Pending

- 63% (12 Polygons) No Action

Collectively, 74% of all area incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. Total acreage documented for this area was 7.5 acres. “Denuded” areas made up 58% of all the incidents documented. This included staging areas, parking areas, Hazardous Materials, and campsites with noticeable resource damage. “Other” made up 11% of documented incidents and included old mining activity and an active shooting area. In most instances, due to the continued use of many of these sites, a no action response was determined. Although resource damage existed in large proportions, feedback from community members indicates that the restoration of these established sites may be in vain. A large number of them have existed for many years and have received continued and regular use. BLM will monitor for growth and evaluate the need for response in the future.

Recreational Observations

Table 14. Recreational Use for Mormon Mesa

	Percentage of Total	**Number of Individual Users**
4 WD	29%	2
ATV/UTV	14%	2
Bicycle	14%	1
Motorcycle	29%	2
Pedestrian	14%	2

A total of 7 observational point features were collected in this area. Four wheel drive and Motorcycle use constitute the majority of use observed.

Coyote Springs

The Coyote Springs area is a thin stretch of public land bisected by U.S. Highway 93, bordered on the east side by the Arrow Canyon Range and by the Sheep Range on the west. An old dry lake bed is situated in the middle. This makes for a beautiful backdrop while coasting along the highway.

Monitoring efforts in this area resulted in 66 incidents being documented. These include:

- 39 Point Features
- 13 Line Features
- 14 Area Features

Monitors collected all three forms of features classes in this area. The following tables represent the types of incidents documented and the category of response.

Point Features

Table 15. Point Features for Coyote Springs

	Mitigated	Pending	No Action
2 Track	50%	50%	0%
Burn Area	50%	50%	0%
Dump w/o Tires	42%	58%	0%
Dump w Tires	100%	0%	0%
Graffiti	0%	100%	0%
N/A	%	100%	0%
Shooting Area w Trash	63%	37%	0%
Sign Damage	90%	10%	0%

Point Feature Total (39 Points)

- 56% (22 Points) Mitigated
- 44% (17 Points) Pending

Collectively, 56% of all point incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. It was found that the most common type of incident documented was Dumping without Tires, making up 31% of all incidents for this area. Sign Damage incidents made up 26% of incidents. Incidents of Shooting Area with Trash made up 20.5 % of all point incidents in the area.

Line Features

Table 16. Line Features for Coyote Springs

	Mitigated	Pending	No Action
2 Track	80%	20%	0%
Hill Climb	100%	0%	0%

Line Feature Total (13 Lines)

- 85% (11 Lines) Mitigated
- 15% (2 Lines) Pending

Line features captured incidents with the most potential to cause severe resource damage this is due, in part, to its tendency for repeated use through a large portion of landscape. Unlike points and areas that provide for relatively static recreation once created, line features provide a dynamic component which allows for locomotion through large portions of habitat increasing the chances of encounters with covered species. Additionally, the creation of this type of resource damage has a larger cumulative impact to habitats through direct mortality of covered species and damage to associated habitats. These types of incidents receive a high priority when deemed to be a significant threat.

Collectively, 85% of all line incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. Two Track incursions made up 77% of all incidents in this area. Hill Climbs made up 33% of the total incidents. A total of 1.8 miles of new incursions were documented.

A further breakdown of the data shows that a substantial portion of the documented resource damage, 77%, was caused by 4 wheel drive vehicles. High Clearance vehicles are suspected of 15% of resource damage. To determine the cause of damage at a site monitors simply have to look for the evidence on the ground (e.g. tracks, track width, road characteristics and trail suitability).

Area Features

Table 17. Area Features for Coyote Springs

	Mitigated	**Pending**	**No Action**
Burn Area	50%	50%	0%
Denuded	18%	55%	27%
Other	0%	100%	0%

Area Features Total (14 Polygons)

- 21.5 % (3 Polygons) Mitigated
- 57% (8 Polygons) Pending
- 21.5% (3 Polygons) No Action

Collectively, 43% of all area incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. Total acreage documented for this area was 19.6acres. “Denuded” areas made up 58% of all the incidents documented in this area. This included parking areas, shooting areas with trash, and dumping without tires. “Other” made up 7% of documented incidents and included an active shooting area. In some instances, due to the continued use of many of these sites, a no action response was determined.

Although significant resource damage existed at some sites, feedback from community members indicates that the restoration of these established sites may be in vain. A large number of them have existed for many years and have received continued and regular use. BLM will monitor for growth and evaluate the need for response in the future.

Recreational Observations

Table 18. Recreational Use for Coyote Springs

	Percentage of Total	Number of Individual Users
2 WD	15.%	2
4 WD	23%	4
ATV/UTV	8%	1
Other	46%	29
RV	8%	1

A total of 13 observational point features were collected in this area. Four wheel drive and Other use constitute the majority of use observed. Other, in this case, was Target Shooting. The southern portion of this ACEC is a popular shooting area, presumably, for Las Vegas residents.

Rainbow Gardens

The Rainbow Gardens area is situated adjacent to the city of Las Vegas and is the gateway to Lake Mead National Recreation Area. Its proximity to Las Vegas and ease of access makes it a difficult area to manage. Resource damage in this area has long been an issue and continues as such.

Monitoring efforts in this area resulted in 110 incidents being documented. These include:

- 54 Point Features
- 51 Line Features
- 5 Area Features

Monitors collected all three forms of features classes in this area. The following tables represent the types of incidents documented and the category of response.

Point Features

Table 19. Point Features for Rainbow Gardens

	Mitigated	Pending	No Action
Dump w/o Tires	22%	78%	0%
Dump w Tires	0%	100%	0%
Fence Damage	100%	0%	0%
Graffiti	20%	80%	0%
HazMat	100%	0%	0%
Sign Damage	91%	9%	0%

Point Features Total (54 Points)

- 61% (33 Points) Mitigated
- 39% (21 Points) Pending

Collectively, 61% of all point incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. It was found that the most common type of incident documented was Sign Damage, making up 43% of all incidents for this area. Dumping without Tires incidents made up 33% of incidents.

Line Incidents

Table 20. Line Features for Rainbow Gardens

	Mitigated	Pending	No Action
2 Track	51%	49%	0%
Hill Climb	100%	0%	0%
Motorcycle	100%	0%	0%

Line Features Total (51 Lines)

- 55% (28 Lines) Mitigated
- 45% (23 Lines) Pending

Line features captured incidents with the most potential to cause severe resource damage this is due, in part, to its tendency for repeated use through a large portion of landscape. Unlike points and areas that provide for relatively static recreation once created, line features provide a

dynamic component which allows for locomotion through large portions of habitat increasing the chances of encounters with covered species. Additionally, the creation of this type of resource damage has a larger cumulative impact to habitats through direct mortality of covered species and damage to associated habitats. These types of incidents receive a high priority when deemed to be a significant threat.

Collectively, 55%% of all line incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. All incidents in this area were 2 track incursions. A total of 22.9 miles of new incursions were documented.

A further breakdown of the data shows that a substantial portion of the documented resource damage, 62%, was caused by ATV/UTVs or 4 wheel drive vehicles (31% each). High Clearance vehicles are suspected of 22% of resource damage. To determine the cause of damage at a site monitors simply have to look for the evidence on the ground (e.g. tracks, track width, road characteristics and suitability).

Area Features

Table 21. Area features for Rainbow Gardens

	Mitigated	**Pending**	**No Action**
Denuded	100%	0%	0%
2 Track	100%	0%	0%
Motorcycle	100%	0%	0%

Area Features Total (5 Polygons)

- 100% (5 Polygons) Mitigated

Collectively, 100% of all area incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. Total acreage of resource damage documented for this area was 10 acres. “Denuded” areas made up 40% of all the incidents documented. This incident was an OHV Play Area. Two Track incursions made up 40% of documented reports. This included an OHV Play Area and a Hill Climb.

Recreational Observations

Table 22. Recreational Use for Rainbow Gardens

	Percentage of Total	Number of Individual Users
Pedestrian	33%	14
2 WD	25%	7
4 WD	21%	9
4 WD (modified)	4%	1
ATV/UTV	4%	1
Bicycle	9%	3
Motorcycle	4%	1

A total of 13 observational point features were collected in this area. Pedestrian use was the most common followed by two wheel drive vehicle use.

Piute/Eldorado

Piute/Eldorado is a large ACEC that surrounds the city of Searchlight and includes two large valleys, Piute and Eldorado. A rich mining history makes this an ideal area to search for old corrals and mining remnants. Washes created by the long slopes of the of the ranges that bound the valleys are abundant creating long swaths of Catclaw Acacia communities.

Monitoring efforts in this area resulted in 157 incidents being documented. These include:

- 104 Point features
- 47 Line features
- 6 Area features

Monitors collected all three forms of features classes in this area. The following tables represent the types of incidents documented and the category of response.

Point Features

Table 23. Point Features for Piute/Eldorado

	Mitigated	Pending	No Action
2 Track	45%	18%	37%
Denuded	0%	100%	0%
Dump w/o Tires	0%	50%	50%
Dump w Tires	50%	0%	50%
HazMat	0%	100%	0%
Motorcycle	8%	84%	8%
N/A	20%	30%	50%
Sign Damage	78%	19%	3%

Point Features Totals (104 Points)

- 52% (54 Points) Mitigated
- 30% (31 Points) Pending
- 18% (19 Points) No Action

Collectively, 70% of all point incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. It was found that the most common type of incident documented was Sign Damage, making up 56% of all incidents for this area. Two Track incidents made up 10% of all incidents documented. “N/A” incidents constituted 9% of all points documented in the area. This includes Road Hazards and a Scenic overlook.

Line Features

Table 24. Line Features for Piute/Eldorado

	Mitigated	Pending	No Action
2 Track	52%	36%	12%
Motorcycle	34%	66%	0%

Line Features Total (47 Lines)

- 51% (24 Lines) Mitigated
- 38% (18 Lines) Pending
- 11% (5 Lines) No Action

Line features captured incidents with the most potential to cause severe resource damage this is due, in part, to its tendency for repeated use through a large portion of landscape. Unlike points and areas that provide for relatively static recreation once created, line features provide a dynamic component which allows for locomotion through large portions of habitat increasing the chances of encounters with covered species. Additionally, the creation of this type of resource damage has a larger cumulative impact to habitats through direct mortality of covered species and damage to associated habitats. These types of incidents receive a high priority when deemed to be a significant threat.

Collectively, 62%% of all line incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. 94% of incidents in this area were 2 track incursions. Motorcycle incursions made up 6% of all incidents in this area. A total of 27.3 miles of new incursions were documented.

A further breakdown of the data shows that a substantial portion of the documented resource damage, 40%, was caused by 4 wheel drive vehicles. ATV/UTVs constituted 28% of incursions. High Clearance vehicles are suspected of 23% of resource damage. To determine the cause of damage at a site monitors simply have to look for the evidence on the ground (e.g. tracks, track width, road characteristics and suitability).

Area Features

Table 25. Area Features for Piute/Eldorado

	Mitigated	**Pending**	**No Action**
Cattle Guard	0%	100%	0%
Denuded	0%	80%	20%

Area Features Total (6 Polygons)

- 83 % (5 Polygons) Pending
- 17% (1 Polygons) No Action

Collectively, 17% of all area incidents were addressed with some form of BLM response, including the determination that no action was needed or proposed. Total acreage documented for this area was 1.4 acres. “Denuded” areas made up 83% of all the incidents documented in this

area. This included parking areas, staging areas and campsites. Cattle Guards constituted 17% of incidents documented.

Recreational Observations

Table 26. Recreational Use for Piute/Eldorado

	Percentage of Total	Number of Individual Users
2 WD	20%	2
4 WD	40%	5
4 WD (modified)	10%	2
Motorcycle	10%	3
Pedestrian	10%	2
RV	10%	1

A total of 10 observational point features were collected in this area. Four wheel drive vehicle was the most common use, followed by two wheel drive vehicle use.

Traffic Counters

A second method used to gather data regarding use of public lands, within the scope of this project, was the installation of traffic counters along roads with relatively high use. Traffic counters allowed the BLM to gather data on the amount of use in certain areas where no such quantifiable data was available. Eleven counters were installed throughout the project area where use was deemed to be relatively high and quantifiable data of this nature was crucial for future planning and management of the area. Location of counters is detailed below:

Gold Butte

A counter placed approximately 13 miles from the State Route 170/ Gold Butte Byway intersection collected the following data from July-September 2011:

- 794 hits logged (this figure is half the actual total to account for vehicles leaving in the same direction they entered)
    - At an average of 2.2 persons per vehicle (source: Federal Highway Administration 2009 National household Travel Survey), the counters recorded 1,746.8 visitors have recreated in the Gold Butte area from July through September 2011.
    - A significant drop in visitation was observed for the summer months compared to the previous, cooler months. For the months of January through June the monthly

average was 944 vehicles. For the hot months of July through September the monthly average was 264. We measured a 72.1% drop in vehicle counts for the summer months.
    - The software predicts that at the current rate a total of 8,245 vehicles will visit the Gold Butte area this year.
- Data gathered from other counters in the area show that at an average of 22.5 vehicles per day on travel the Gold Butte Backcountry Byway with 34% continuing to travel west to the Black Butte area and another 42% traveling east into Arizona.

Mormon Mesa

Two counters were placed along two major routes that run through the interior of the Mormon Mesa ACEC, one on the Carp/Elgin Rd and the other along Halfway Wash Rd. Both are north-south trending routes that connect Clark and Lincoln counties. The following data was recorded from July through September 2011:

- Carp/Elgin counter logged 850 hits.
    - At an average of 2.2 persons per vehicle, the counters recorded 1,870 visitors to the area for the months of July through September.
    - The cooler months of May and June received a monthly average of 429 hits. For the hotter months of July through September the monthly average dropped 35% to 283. (Note: April is not accounted in this figure due to an abnormality in that months data due to construction traffic.)
- Halfway Wash counter logged 400 hits.
    - For the months of July through September the monthly vehicle average was 133.
    - An approximate 65% drop in visitation was experienced in the hotter summer months over the previous months of data.
    - The software predicts that at the current rate a total of 2,637 vehicles will drive through Halfway Wash this year.

Coyote Springs

Two counters were placed adjacent to US 93 on two roads that dead end and receive heavy use by shooters. One was placed at mile marker 57 west of the highway. Another counter was installed at mile marker 58 on the east side of the highway. The following data was recorded from July through September 2011:

- The west side counter logged 1,091 hits (this figure is half the actual total to account for vehicles leaving in the same direction they entered)
    - At an average of 2.2 persons per vehicle, the counters recorded 2,400 visitors recreating on the west side.

    - The software predicts that at the current rate a total of 1,091 vehicles will visit the west side of Coyote Springs ACEC at this location.
    - For the previous months of data, the monthly vehicle average was 319. For the months of July through September the monthly average was 363 vehicles. An approximate increase of 13% for the summer months.
    - Law Enforcement has taken special interest in the times of visitations for this area. Weekends experience significantly higher visitation rates. Mid-day encounters the most use but, interestingly, late night and early morning hits have been recorded. This is when a large percentage of crimes are suspected to occur (e.g. graffiti, burning, dumping, etc.).
- The east side counter received 1,182 hits (this figure is half the actual total to account for vehicles leaving in the same direction they entered). This counter was expected to receive the most hits as it is at the site with the most resource damage.
    - At an average of 2.2 persons per vehicle, the counters recorded 2,600 visitors recreating on the east side from July through September.
    - A 2% increase in visitation was experienced over the previous months of data (January through June 2011).
    - The software predicts that at the current rate a total of 4,635 vehicles will drive in to recreate in the east side of Coyote Springs ACEC at this location.
    - Law Enforcement has taken special interest in the times of visitations for this area. Weekends experience significantly higher visitation rates. Mid-day encounters the most use but, interestingly, late night and early morning hits have been recorded. This is when a large percentage of crimes are suspected to occur (e.g. graffiti, burning, dumping, etc.).

Rainbow Gardens

Two counters were installed in the Rainbow Gardens ACEC, one at the north end, adjacent to Lake Mead Blvd. and the other at the south end of Kodachrome Rd., which was recently reengineered. The following data was recorded from July through August 2011:

- The Lake Mead counter logged 2,163 hits.
    - A 32% decrease in visitation was experienced in the hotter months of July through September over the previous cooler months.
    - At an average of 2.2 persons per vehicle, the counters recorded 4,758 visitors recreating or passing through this area.
    - The software predicts that at the current rate a total of 16,220 vehicles will pass through this area this year.
    - This area experiences heavy use due to its proximity to Las Vegas.
- The Kodachrome counter logged 476 hits.

- An approximate 19% increase in visitation was experienced this quarter over the previous, cooler months.
- At an average of 2.2 persons per vehicle, the counters recorded 1,047 visitors recreating or passing through this area.
- The software predicts that at the current rate a total of 4,199 vehicles will pass through this area this year.
- This area experiences heavy use due to its proximity to Las Vegas.

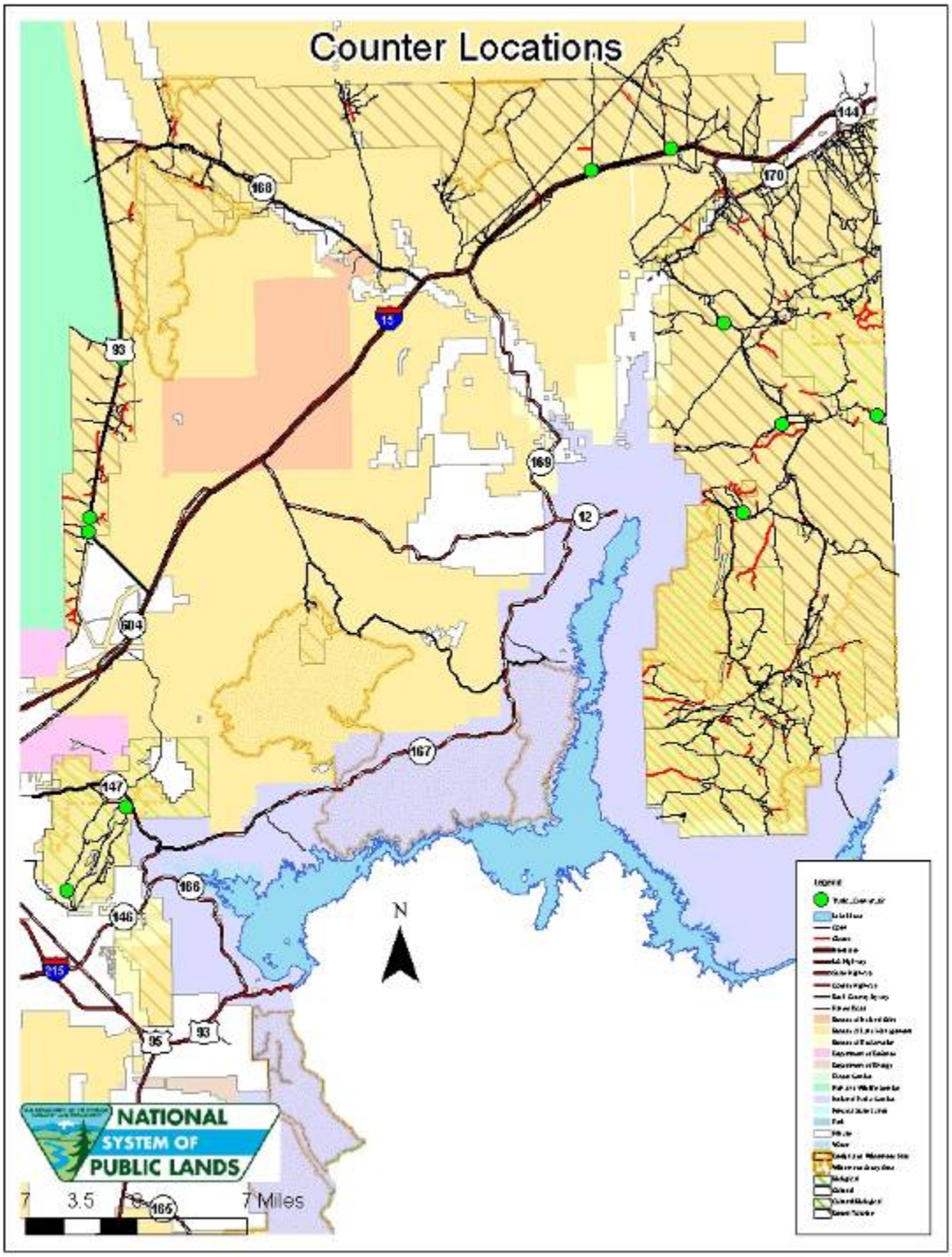

Figure 13. Map showing locations of traffic counters.

Goal 2

To meet the second goal of ‘managing roads through signage to aid in proper use by public’, BLM continued to install and repair signs along open routes within the project area. The installation of signs in conserved areas informs the public of the allowed uses in the area, demarcates open and designated routes, provides interpretive literature, and helps protect resources. During the term of this agreement BLM installed, repaired or installed signs as needed throughout the project area. Sign types included fiberglass markers with decals affixed, metal and plastic signs mounted in posts, guide/directional signs mounted on double wooden posts, informational panels mounted on metal posts, and kiosk with interpretive and area information. BLM installed and repaired approximately 395 signs during the term of the agreement. The type and number of signs installed include:

- 307 fiberglass markers
    - Includes 128 replacements
- 8 kiosks
- 9 guide signs
- 2 “byway” signs mounted on single wooden posts
- 69 metal/plastic signs mounted on metal posts including the 10 informational signs developed under this agreement

Fiberglass markers have a wide variety of uses, most prominently as route markers. Fiberglass markers were used throughout the project area to mark trailheads, intersections, closed routes, areas closed to motor vehicles, end of routes, etc. Due to their durability, affordability and ability to withstand impacts and damage they were the most commonly used form of signage for this project. But, due to their pervasiveness, they are the type of signage most vandalized and damaged. Never the less, replacing a fiberglass marker proved to be more expedient than other types of signage.

Kiosks serve as a central location for Agencies to disseminate information about a particular area. Information such as maps, rules and restrictions, wildlife in the area, historical and archeological interpretive materials, and community/agency events can be posted and displayed for all visitors to see. As per the stipulations of this agreement, BLM installed 8 kiosks throughout the project area. The kiosks were of a three panel design with one panel displaying interpretive materials about the area and the second panel containing a map. The third panel will be available for other interchangeable materials. Some kiosks will have a message board on back side where community events and other temporary information can be posted.

Guide signs, or directional signs, are designed to give travelers an accurate distance from one site to another. These signs vary in size depending on the speed of any given road segment. Engineering specifications determine the size of the sign contingent on the speed that vehicles are expected to be traveling on that road and the amount of text on the sign itself. All signs installed met BLM criteria and installation specifications.

Metal or plastic signs generally are mounted on metal or wooden posts and are designed to for many uses. For this project most metal/plastic signs were mounted on metal and displayed rules and regulations for vehicles in that particular area. Some contained interpretive literature or marked areas where restoration is in progress.

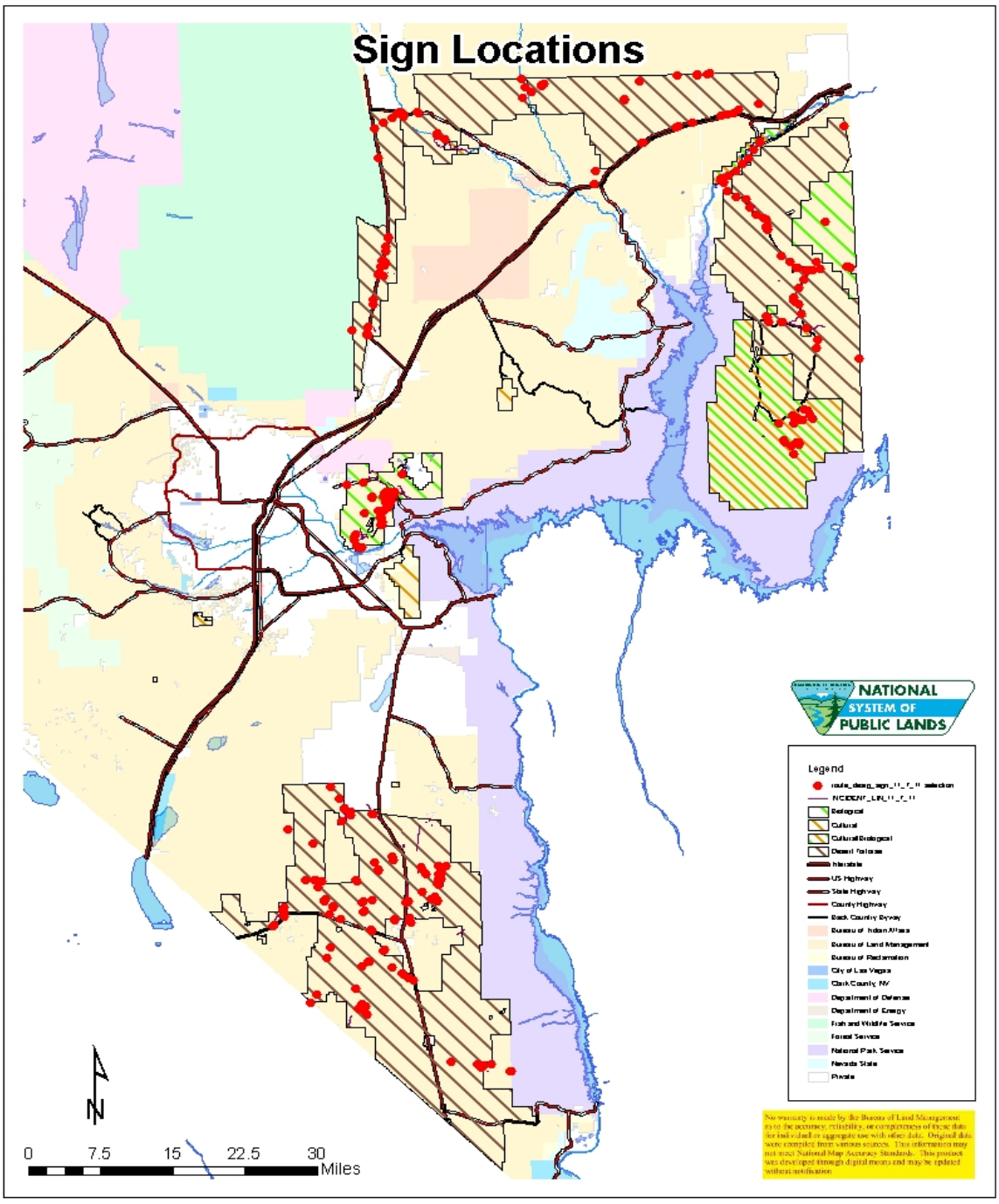

Figure 14. Location of signs installed or repaired.

Goal 3

The third goal, to increase public awareness regarding approved roads and proper use, was addressed by actively engaging the local and rural communities in several venues. During the term of this agreement attended and participated in several public outreach events. BLM chose these particular events for their potential impact and effectiveness due to the number and caliber of attendees. Attendees included Town Board members, community leaders, organization leaders and other members of the public. These events included the following:

- Gold Butte National Public Lands Day event (September 25, 2010)
- Rainbow Gardens National Public Lands Day event (September 25, 2010)
- Sunrise Manor Town Advisory Board meeting (September 30 , 2010)
- Bunkerville Town Advisory Board meeting (February 24, 2011)
- Moapa Town Advisory Board meeting (June 14, 2011)
- Moapa Valley Town Advisory Board meeting (June 15, 2011)

During the course of the six outreach events, BLM representatives interacted with 116 members of local communities addressing a wide array of concerns. The most pressing and ubiquitous concern is that of access. The public present had the opportunity to directly speak with any of a number of BLM representatives concerning this issue. The outcome was an understanding that further steps need to be taken to protect resources and maintain access for those who responsibly enjoy public lands. Maps of the designated routes in the five ACECs were provided to those who attended events. BLM discussed the reason for the designated roads, purpose of the ACECs, explained the purpose of the road monitoring effort (mitigation for development of public land under the MSHCP and to document resource damage in order to improve habitat and resource protection), and results of monitoring. BLM clearly articulated that there are a large number of illegal trails in each area and that illegal use is still occurring. Town Advisory Board members were interested in understanding how BLM proposes to deal with the compliance issues. BLM discussed the current strategy with law enforcement, restoration and use of fences and gave some examples of how successful those methods have been the areas in the past.

BLM spoke about the benefit volunteers from the community have been to the success of the Road Designation and Road Monitoring projects that the BLM has conducted as mitigation for the Clark County MSHCP. It was explained that the initial attempt to designate roads in the late 1990s was not successful as the inventory conducted by BLM was not complete. The public became involved through Partners in Conservation (PIC) and other efforts and helped document the existing roads and trails. Over the last 2 years, members of the local communities have monitored the ACECs. At the time of events 4-6, BLM alone had logged about 5,000 miles monitoring roads. PIC had logged around 40,000 miles. The involvement of the community has been a large part of the success. BLM explained that a tremendous amount of work has been completed in a short time period, much faster than BLM could have completed alone. Having

volunteers involved helps the BLM find out sooner when something is going wrong out there. This allows the BLM to address the issues faster.

Michael Dias, Sunrise Manor Town Advisory Board member, noted that he has seen improvement in signing and fencing along the southern end of the Rainbow Gardens ACEC which makes the location of the designated open roads easier to find.

Bunkerville Town Advisory Board members provided feedback on the content of the signs, suggesting de-emphasizing the BLM in the messages and use of rectangular signs instead of the standard truncated shape BLM typically uses for directional signs. Attendees of the meeting expressed interest in opportunities to work together in the future to take care of the area.

Moapa Town Advisory Board members asked for clarification about what qualified as an incident. In particular, they wanted clarification regarding the legality of target shooting and hunting in the ACECs as BLM reported that target shooting was causing habitat damage and public safety concerns in Coyote Springs ACEC. BLM clarified that incidents include recreational use observations, like fire rings, camping areas and parking/staging areas. They also include location of illegal activities such as off-road travel, dumping, and large denuded areas. It was explained that responsible, safe target shooting is legal on the public lands except in the Las Vegas Valley, Pahrump, portions of Red Rock Canyon NCA, and near developments. Shooting of household appliances glass and across roadways is not legal. The areas of concern in Coyote Springs are many acres in size and have been denuded by target shooting activities, so they do not contain habitat for the desert tortoise. This area is designated critical habitat for the species.

Moapa Valley Town Advisory Board member Dustin Nelson discussed some positive things that had been accomplished by the public working with the BLM in these types of projects and expressed an interest in finding ways to work together in the future.

Figure 15. Volunteers cleaning up trash in Rainbow Gardens at an outreach event.

To increase public awareness regarding approved roads and proper use, BLM produced outreach materials. BLM designed, developed and made available:

- maps of open roads within the ACECs depicting the designated roads;
- brochures with information on responsible desert use, legal activities, and open areas; and
- New and upgraded information on the BLM Southern Nevada District webpage that provide the public with an explanation of the road designations, rules and regulations within the ACECs, an explanation of the road signs and what they mean, and BLM response to resource damage.

Goal 4

'Volunteer Effectiveness' was determined through validating the accuracy of data provided by volunteers. Volunteer data made up 64% of all final data and proved to be largely accurate in identifying incidents. Although not all incidents identified by volunteers received a site visit, they have all been reviewed and prioritized. Volunteer participation and contributions allowed the BLM to monitor an otherwise unfathomable large area of public lands. For instance, between October 2010 and September 2011, volunteers contributed 1,015.5 hours and drove 10,025 miles of roads in the Gold Butte and Mormon Mesa ACECs.

Informal volunteers (those not using BLM data dictionary) contributed in different ways. This type of volunteer provided information regarding resource damage they encountered while conducting other activities or simply recreating in the area. These types of incidents were validated in the field and added to the database as BLM collected data features. Therefore, no accurate count was maintained to determine the number of data collected through these means. Suffice it to say that it made up a small percentage of all data collected using the approved methods.

OTHER DELIVERABLES:

The following is a summary of deliverables and milestones completed in addition to field monitoring efforts.

Milestones M01 and M02 - Milestones M01 Contract Award and Mobilization and M02 the Project Kick-off Meeting, officially started BLM's performance under this agreement.

Deliverable D01 - BLM developed a Draft Work Plan with Area Maps (Deliverable D01) to outline methods for how the project will be conducted and how BLM will meet all milestones and deliverables. To develop the work plan, Jimmy Linares, GBI Research Associate, documented current BLM road monitoring methods and coordinated with Partners in Conservation regarding their methods. These were

reviewed by Carolyn Ronning, BLM's Project Manager, and procedures were clarified. The Draft Work Plan with Area Maps was delivered on March 1, 2010. Clark County's Desert Conservation Program (DCP) review of the draft identified that further detail was required to clarify methods for DCP)Project Managers and to add a Volunteer Plan. BLM revised the Draft Work Plan with Area Maps, and delivered it to the DCP by the revised due date, March 19, 2010.

Deliverable D02 - A Draft Data Management Plan (Deliverable D02) was developed to outline how BLM will collect, manage and deliver spatial and aspatial data during the course of the project. BLM Project Staff coordinated with GIS Specialists from the BLM Nevada State Office and Southern Nevada District Office to ensure that data management processes were correct and met BLM standards. This deliverable was accepted by the DCP on March 4, 2010 with one correction and two changes to the proposed attributes that needed to be addressed in the final version. BLM reviewed the proposed changes and coordinated with the DCP Project Manager regarding the best way to add the requested start and end times to the data collection procedures. The start time was added to the "WHO AM I" attribute table and a new feature called "END_POINT" was created with an attribute for end time. BLM addressed the requested changes in the Data Management Plan and delivered the Final Data Management Plan (Deliverable 05) to the DCP on March 24, 2010.

Deliverable D03 -The first Quarterly Progress Report (Deliverable D03) was prepared to document the status of the project and outline deliverables and milestones accomplished during the first 90 days of the project.

Deliverable D04 - BLM incorporated input received from the DCP and developed Final Work Plan with Area Maps (Deliverable D04). This product outlines methods for how the project will be conducted and how BLM will meet all milestones and deliverables. To develop the work plan, Jimmy Linares, Research Associate, documented current BLM road monitoring methods and coordinated with Partners in Conservation regarding their methods. These were reviewed by Carolyn Ronning, BLM's Project Manager, and procedures were clarified. Changes were made to the procedure for documenting roads monitored at the request of the DCP. (Completed: May 14, 2010/Accepted: May 17, 2010.)

Deliverable D05 - Due to changes in the procedure for documenting roads monitored made to the Final Work Plan with Area Maps, BLM updated the Final Data Management Plan (Deliverable D05) at no cost to the DCP. It was updated to make it consistent with the Final Work Plan. (Revision delivered: May 14, 2010)

Deliverable D06 - BLM conducted a Trail Data Collection and Data Transfer (Deliverable D06) to demonstrate the processes for data collection and demonstrate successful transfer of data to the DCP. (Completed: April 20, 2010/Accepted: April 29, 2010)

Deliverables D07 and D09 - BLM developed four GIS data layers documenting baseline conditions in the ACECs:

- Corrected locations for RS-2477 claim roads within the ACECs (RS-2477_Confirmed_Locations.shp)

- Existing sign locations with the ACECs (Route_Signs.shp)
- Designated roads within the ACECs (Designated_Routes_open.shp), and
- Current incursions documented within one mile outside the ACEC boundaries (Vehicle_Incursions_1_Mile.shp)

In addition, BLM delivered the following GIS data layers:

- ACEC boundaries (ACEC.shp)
- Roads that have been designated as closed (Designated_Routes_closed)
- Major Roads (Major_Roads.shp)
- Roads that need to be field verified to determine the location of RS-2477 claim roads (RS-2477_Unconfirmed_Locations.shp)

These layers were delivered May 20, 2010 as /Accepted: May 27, 2010) as Draft GIS Delivery of Baseline Conditions (Deliverable D07). Following acceptance of the draft deliverable, BLM finalized the layers and delivered the Final GIS Delivery of Baseline Conditions (Deliverable D09) (Completed July 1, 2010)

Deliverable D08 - BLM prepared the Quarterly Progress Report (April 1, 2010 – June 30, 2010) (Deliverable D08) to document progress on the project. (Completed July 1, 2010)

Deliverable D10 - BLM developed the Monitoring Summary Report (Deliverable D10) summarizing activities performed under this agreement (Completed July 1, 2010). The reports addresses all activities outlined in the site monitoring visit deliverable and include:

- work completed;
- number of miles driven;
- miles of roads monitored;
- road conditions;
- signs, markers and kiosks installed or maintained along roads;
- observed public use of roads;
- accuracy of volunteer observations and recommendations for improvements;
- locations and types of illegal use documented, and
- BLM response.

Deliverable D11 - BLM developed a Draft Sign Plan (Deliverable D11).This report outlines key messages to be used in the educational materials for the web and educational kiosks. The messages will include the purpose of the ACECs, rules and regulations of behavior, and resources of the areas. The draft was delivered to the DCP on July 1, 2010

Deliverable D12 - BLM completed the Final Sign Plan on July 30, 2010 and delivered it as Deliverable D12. The Sign Plan is being implemented.

Deliverable D13 – BLM prepared and presented a speech for the 2010 MSHCP Annual Progress Report Symposium. The presentation described the project, accomplishments during the first two quarters of the agreement and results of one quarter of BLM road monitoring.

Deliverable D14 - BLM prepared this Quarterly Progress Report (July 1, 2010 – September 30, 2010) (Deliverable D14) to document progress on the project. (Completed October 1, 2010)

Deliverable D15 - BLM prepared the Monitoring Summary Report-Two (Deliverable D15) summarizing activities performed under this agreement (Completed October 1, 2010). The report addresses all activities outlined in the site monitoring visit deliverable and include:

- work completed;
- number of miles driven;
- miles of roads monitored;
- road conditions;
- signs, markers and kiosks installed or maintained along roads;
- observed public use of roads;
- accuracy of volunteer observations and recommendations for improvements;
- locations and types of illegal use documented, and
- BLM response.

Deliverable D16 – BLM prepared six maps showing open roads in each ACEC. The maps were designed to be posted on the BLM website where they can be custom printed by public. Due to the complexity of the data the public needs access to on the maps (land status, ACEC boundaries, wilderness boundaries, topographical contours, and open roads), the maps were created with layers that can be turned on and off. For example, the ACEC hatching and section lines can be removed to better display the roads. (Completed October 1, 2010)

Deliverable D17 – BLM prepared additional pages to update the BLM's Southern Nevada District website. The design was based on BLM standards for the Communiqué software based site. The Draft web Page was delivered in Microsoft Word for DCP review. The pages include an explanation of the road designations, rules and regulations in the ACECs, and BLM standard responses to resource damage (i.e., restoration). (Completed October 1, 2010)

Deliverables D18, D19 and D20 - Three outreach events were attended this quarter to update the community on the road monitoring effort. Documentation of the events was Completed October 1, 2010. These events took place in the following locations and dates:

- Gold Butte National Public Lands Day Event on 9/25/2010
- The Great Unconformity National Public Lands Day Event near Rainbow Gardens ACEC on 9/25/2010
- Sunrise Town Advisory Board Meeting on 9/30/2010

Deliverable D21 - BLM completed Draft Text and Kiosk Design and delivered to County on October 29, 2010. The kiosks will consist of three educational panels including a map of the ACEC with designated routes, information about the ACEC, recreational opportunities, rules and natural history information.

Deliverable D22 – BLM completed Draft Text for Single Panel Signs and delivered to County on November 1, 2010. The panels will consist of information about the ACEC, recreational opportunities, and rules.

Deliverable D23 – Final ACEC open roads map was delivered to the County on October 29, 2010. The maps will be made available at the BLM office and on the BLM web page following publishing.

Deliverable D24 – Final Web Page Design was completed and delivered to the County on October 29, 2010. The deliverable was rejected on November 5, 2010. BLM addressed the three additional changes requested by the County. The revised web Page was accepted on November 30, 2010. The final web page layout will be forwarded the BLM public affairs for publication.

Deliverable D25 - BLM prepared this Quarterly Progress Report for the reporting period of October 1, 2010 through December 31, 2010 to document progress on the project (Completed December 29, 2010). Delivered to the County December 29, 2010.

Deliverable D26 – Three distinct draft brochures for Coyote Springs ACEC, Gold Butte ACEC, and Mormon Mesa ACEC were designed and delivered to the County on December 29, 2010.

Deliverable D27 - Monitoring Summary Report detailing monitoring activities and findings was completed and delivered to the County on December 29, 2010.

Deliverable D28 - Annual Project GIS Data Delivery was made on December 29, 2010

Deliverable D29 – NEPA for Interpretive Signing was completed and delivered to the County on December 29, 2010. The environmental analysis for the signs and kiosks was conducted separately resulting in two separate documents and decisions.

Deliverable D30 - BLM prepared this Quarterly Progress Report for the reporting period of January 1, 2011-March 31, 2011 to document progress on the project (Completed March 30, 2011).

Deliverable D31– Three distinct brochures for Coyote Springs ACEC, Gold Butte ACEC, and Mormon Mesa ACEC were designed and delivered to the County on December 29, 2010.

Deliverable D32 – BLM prepared the Monitoring Summary Report-Four (Deliverable D32) summarizing activities performed under this agreement (Completed March 30, 2011). The report addresses all activities outlined in the site monitoring visit deliverable and include:

- work completed;
- number of miles driven;
- miles of roads monitored;
- road conditions;
- signs, markers and kiosks installed or maintained along roads;
- observed public use of roads;
- accuracy of volunteer observations and recommendations for improvements;
- locations and types of illegal use documented, and
- BLM response.

Deliverable D33 – The Biennium Progress report was prepared for the reporting period of the years 2010-2011 to document the progress for the entire project period up until this quarter. (Completed June 30, 2011)

Deliverable D34 – BLM prepared this Quarterly Progress Report for the reporting period of January 1, 2011-March 31, 2011 to document progress on the project (Completed July 1, 2011).

Deliverable D35 – A no-cost time extension until August 1, 2011 was requested and approved on June 21, 2011.

Deliverable D36 – Ten single panel signs have been installed throughout the project area including three in Gold Butte, five in Mormon Mesa and two in Coyote Springs. (Completed June 27, 2011)

Figure 16. Jimmy Linares, GBI, documenting the newly installed Information Sign on Whitney Pass in Gold Butte.

Deliverable D37 – BLM prepared the Monitoring Summary Report-Five summarizing activities performed under this agreement (Completed June 30, 2011). The report addresses all activities outlined in the site monitoring visit deliverable and include:

- work completed;
- number of miles driven;
- miles of roads monitored;
- road conditions;
- signs, markers and kiosks installed or maintained along roads;
- observed public use of roads;
- accuracy of volunteer observations and recommendations for improvements;
- locations and types of illegal use documented, and
- BLM response.

Figure 17. Jimmy Linares, GBI, repairing a broken habitat protection fence. This is a typical point incident recorded during monitoring an ACEC.

Deliverable D38 – Outreach event 4 was held at the Bunkerville Town Advisory Board meeting on February 24, 2011. BLM presented the board with results and findings from the ongoing roads monitoring and responded to questions and concerns from the board and community members.

Deliverable D39 – Outreach event 5 was held at the Moapa Town Advisory Board meeting on June 14, 2011. BLM presented the board with results and findings from the ongoing roads monitoring and responded to questions and concerns from the board and community members.

Deliverable D40 – Outreach event 6 was held at the Moapa Valley Town Advisory Board meeting on June 15, 2011. BLM presented the board with results and findings from the ongoing roads monitoring and responded to questions and concerns from the board and community members.

Deliverable D35 – A no-cost time extension until August 1, 2011 was requested and approved on June 21, 2011. Eight kiosks were installed throughout the project area including three in the Gold Butte area, three in the Mormon Mesa area and two in the Coyote Springs area. (Completed July 29, 2011)

Deliverable D42 – BLM prepared this Quarterly Progress Report for the reporting period of July 1, 2011-September 30, 2011 to document progress on the project (Completed September 30, 2011).

Figure 18. Virgin Peak.

Deliverable D44 – BLM prepared the Monitoring Summary Report-Six summarizing activities performed under this agreement (Completed September 30, 2011). The report addresses all activities outlined in the site monitoring visit deliverable and include:

- work completed;
- number of miles driven;
- miles of roads monitored;
- road conditions;
- signs, markers and kiosks installed or maintained along roads;
- observed public use of roads;
- accuracy of volunteer observations and recommendations for improvements;
- locations and types of illegal use documented, and
- BLM response.

Figure 19. Road signs installed In Mormon Mesa to inform the public about resources and use limitation.

Deliverable D46 – BLM prepared the Monitoring Summary Report-Seven summarizing activities performed under this agreement (Completed November 15, 2011). The report addresses all activities outlined in the site monitoring visit deliverable and include:

- work completed;
- number of miles driven;
- miles of roads monitored;
- road conditions;
- signs, markers and kiosks installed or maintained along roads;
- observed public use of roads;
- accuracy of volunteer observations and recommendations for improvements;
- locations and types of illegal use documented, and
- BLM response.

Deliverable D49 – The final Project GIS Delivery was completed on December 15, 2011. This delivery included all GIS data collected by BLM and GIS data BLM analyzed that was collected by Partners in Conservation, a spatial data including documentation from BLM Law Enforcement and the Southern Nevada Cultural Site Stewards, and BLM photographs.

Deliverable D50 – The Biennium Progress report was prepared for the second year of the project to document the progress. (Completed December 15, 2011)

Deliverable D51 – The Final Project Report was completed documenting project methods, results and outcomes. (Completed December 15, 2011)

Deliverable D52 – The Final Review Summary Form and Project Claim Release was completed on December 15, 2011.

Additional Outreach Event: BLM attended the Searchlight Town Advisory Board on September 14, 2011. BLM presented the board with results and findings from the ongoing roads monitoring and responded to questions and concerns from the board and community members. This outreach event was similar to the Outreach Events completed previously under this Interlocal Agreement. This event was not a deliverable.

5. Evaluation/Discussion of Results

Monitoring

The methods used, and described herein, resulted in the collection of a tremendous amount of data. The amount of data collected was well above what BLM has gathered through past efforts in southern Nevada and will continue to be used well passed the term of this project. Signing and minor restoration treatments conducted by the BLM/GBI monitors to solve issues encountered initiated recovery of damaged areas and reduced continued use of those incursions.

Road monitoring produced 561 point features representing incidents of various sizes and types throughout the project area. Statistically, signs damage was the most common type of incident that documented, making up 36% of incident points and 26% of all incidents combined. Although some signs were in a deteriorated state they constituted only a small and insignificant portion of the total number of damaged signs. Therefore, those signs damage incidents were not filtered out.

The specific kind of damage to signs varies from altogether missing to present but damaged beyond repair. The repair of signs is crucial to help keep the public informed of the appropriate use of ACECs. It is believed that signage also adds a certain bit of civility to an otherwise wild landscape. Signs have proven to work as deterrents for keeping vehicles on roads and off of closed areas. Although, not all signs are respected the majority remain intact, as well as the areas they are attempting to protect. During the term of this project 307 signs were installed, not including those existing prior to the project (approx. 1,119signs), and 41% of those installed during the term of the project were replacements. But of the total number of existing signs the number replaced for during this project is only 11%.

Signage continued throughout this project. An additional 267 signs were installed augmenting the existing 1,159 signs installed before the beginning of the project. Signage is the most effective method of familiarizing recreationalist with the rules and regulations of an area as well as demarcating open roads and deterring the use of closed areas/roads. Its effectiveness can be measured by the response from the public. Although not all affected parties are in agreement of the effectiveness of designating roads, or the need for them, all who have visited the ACECs

covered by this project are familiar with the different signs that are posted throughout. From fiberglass markers, to directional signs and kiosks visitors have no shortage of opportunities to become familiar with the expectations of users in the area. It is with this intention that location of installation and the message being conveyed is carefully planned. Signs are placed where they are most effective and the messages they convey is to be accurate, non-offensive, and clear. Through the various contacts that BLM made with the public, it is clear that signs have been noticed and the public is becoming acquainted with the area rules and regulations.

Line features recorded incidents on the landscape that have the greatest potential for resource damage. Unlike points and areas that provide for relatively static recreation once created, line features provide a dynamic component which allows for locomotion through large portions of habitat increasing the chances of encounters with covered species. Additionally, the creation of this type of resource damage has a larger cumulative impact to habitats through direct mortality of covered species and damage to associated habitats. These types of incidents receive a high priority when deemed to be a significant threat.

Although line features for this project only made up approximately 20% of all incidents documented they represent approximately 75.5 miles of incursions. Through this project BLM was able to identify these sites and can now implement a restoration plan to address the restoration for them.

BLM found that traffic counters are a great remote tool to help determine when and where to focus Law Enforcement and monitoring efforts and to evaluate the need for certain facilities or interpretive materials/literature. Counters provided information on intensity of use for areas or specific roads that can aid in making site specific or area wide management decisions in the future. Additionally, they can also reinforce or overturn long held assumptions regarding the intensity of use in any given area. Their ease of use, durability and adaptability make them great compliment to roads monitoring.

Documentation of areas with resource damage largely identified areas of casual use and other recreational activities. This method identified 44.6 acres of disturbance, collectively, distributed among 70 sites. Of the all the data collected for area disturbances, 70% consisted of sites that receive regular use from different types of users. The public has created, over time, areas where they can camp, stage their vehicles, park and shoot. BLM will consider the value of each of these sites in the future. It may be imprudent for these user created sites to be removed if it is believed that the public would only create them again creating even more resource damage.

The roads monitoring program shifted the BLM response to resource damage from one of reactive to preventative. Having road monitors search for and identify disturbances as early in their inception as possible gives BLM restoration efforts a better chance at being effective and successful by virtue of containing the damage and deterring future use of the affected area.

Immeasurable results from monitoring include the presumption that more vehicles remained on roads with the aid of signage; instances of signage replacement has dropped as the public becomes more familiar and accepting of road designation and signing; and covered species and associated habitats survival probability increased with a decrease in linear disturbances and the continued use of incursions.

Outreach Materials

Maps, brochures and the webpage designed for this project have received a positive and warm welcome from the public. Their effectiveness cannot be measured alone. These pieces of literature and information are a component of a much larger attempt to engage the public in a meaningful manner. Providing the public with the information contained in the brochures and the webpage allows the BLM to continue to be more transparent with the public as to what management decisions have been made. They also provide an opportunity for a dialogue between BLM and public. Where the brochures and maps are available they are taken immediately by the public. This demand for this information is evidence that their production and distribution was not in vain but rather a welcomed and anticipated move by the BLM. Their widespread distribution will serve to reduce resource damage on public lands by preemptively familiarizing the public before they travel into conserved public lands.

Outreach Events

The outreach events helped the public who we interacted with understand what the route signing meant and have discussed with us that they understand what the open routes are and what the designations were implemented to achieve. Using member of the public as participants in monitoring has helped in the public compliance with area rules and regulations. While attending outreach events members of the public approached BLM and GBI staff and shared with us that they have reached a better understanding of BLM efforts and developed a greater acceptance for the current rules and regulations.

Outreach events helped raised public awareness of BLM and DCP efforts to offset impacts caused by the development of private lands. And how those efforts benefit the public and the resources they enjoy visiting in addition to benefiting the covered species.

Volunteers

Of the 561 points documented 350 where documented by volunteers (62%). Reflecting back on all the work volunteers provided for this project it can generally be said that the information collected by them was of great value. Overall, volunteer involvement in the project was a great success. Their participation and contributions allowed the BLM to monitor an otherwise unfathomable large area of public lands, over half a million acres. For instance, between October 2010 and September 2011, volunteers contributed 1,015.5 hours and drove 10,025 miles of roads in the Gold Butte and Mormon Mesa ACECs.

A downfall to volunteer data is the need for validation, cleanup of data and the inconsistencies in the methods for collecting data. This could be addressed by being more selective with volunteers and providing more detailed instruction and training. But these drawbacks are overshadowed by the tremendous amount of area covered and data collected by volunteers.

An additional success not measured or intentional was the relationships formed thorough this project. By virtue of being in the field and visible to the public BLM personnel involved with this project have been able to interact with and engage recreationalists, agency staff, community leaders, organizational leaders, etc. These relationships are essential to garner the respect and understanding of the public and, ultimately, their cooperation as we implement management decisions that will improve the survivability of covered species.

6. Conclusion

As stated earlier, this roads monitoring program shifted the BLM response to resource damage from one of reactive to preventative. It allowed for the discovery of incursions and other habitat disturbances before they became larger issues affecting more habitat, thus leading to an increase in habitat loss. It also helped create a picture of the current baseline conditions and extent of issues facing each ACEC. The continuation of monitoring activities is essential for an agency to get a grasp of the issues that need addressing regarding resource health. Additionally, monitoring will help identify, not only the problems facing an area, but also the success and challenges resulting from previous implementation actions.

Monitoring was a great compliment to Restoration and Law Enforcement helping to make these programs more efficient and effective. Law enforcement benefited from monitoring by having more personnel on the ground to identify problem areas and initiate solutions. Restoration benefited from the additional information collected regarding damaged habitat, the extent of damage in any given area, and the resources needed for the mitigation of the affected areas. Also, monitoring afforded Restoration more time for planning and coordinating projects to restore disturbances. With roads monitoring in effect both Law Enforcement and Restoration programs could prioritize where and when to focus resources and time with greater effectiveness and success.

This project has resulted in more public interest in volunteering on public lands in communities near the ACECs. Some of the project the public has approached the BLM and community groups to participate in include: restoration projects, site cleanups, providing trash cans and dumpsters on busy weekends, monitoring shooting areas, sign installation, community drive historic site inventories.

Following the implementation of designated routes a concern was voiced by some members of the public that individuals with competing views on the matter of road, ACEC, wilderness and NCA designations would maliciously tamper with signs in favor of their conservation or access goals, be it to close more roads or open more roads. Having an inventory of signs installed and the messages they contain has helped BLM to alleviate those concerns. Whenever a sign was removed or damaged BLM was able to replace it with an identical sign. In the event that signage

was tampered with monitoring would be able to detect the incident and BLM would be able make the necessary repairs.

7. Recommendations

- Considering the results from this project BLM recommends the continuation of road monitoring activities throughout conserved lands. This needs to include agency staff as well as volunteers. (We do not recommend a volunteer only effort to ensure information gathered results in restoration or other appropriate management response.)
- Agencies should continue to work together across administrative boundaries to develop common data collection methods and databases to allow for more regional analysis of trends.
- Efforts should continue to engage the public to participate in stewardship projects to increase their awareness of conservation goals, knowledge of covered species and other resources in Clark County, and compliance with rules established to reduce threats to covered species.
- Additional monitoring methods should be sought to identify incursions made by motorcycles and methods to dissuade cross-country travel by these users. It would also be beneficial to better understand the level of impact and threat a motorcycle traveling off designated roads creates for terrestrial species like desert tortoise and burrowing owl compared to ATV and trucks. This would help determine how much focus should be given on documenting and restoring these tracks, and targeting education of these users.
- Efforts should be made to simplify the data we request volunteers to collect in a way that continues to provide the same value that we found during this project, and reduces equipment cost and requirements they need to participate fully.

8. Literature Cited

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