

# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
*Executive Director*

### Division of Oil, Gas and Mining

JOHN R. BAZA  
*Division Director*

GARY R. HERBERT  
*Governor*

GREGORY S. BELL  
*Lieutenant Governor*

Outgoing  
C0070005  
#4061  
OK

June 28, 2012

Wess Sorensen, Mine Manager  
Canyon Fuel Company, LLC  
HC 35 Box 380  
Helper, UT, 84526

Subject: 2011 Annual Report Review Completion, Skyline Mine, C/007/0005, Task ID #4061

Dear Mr. Sorensen:

The Division staff has completed the review of the 2011 Annual Report. Enclosed is a copy of the review with each reviewer's comments completed on June 28, 2012. We would like to draw your attention to the following comments made by the reviewers.

- Please submit the macroinvertebrate surveys to the Division as soon as they are available.
- The raptor surveys were not conducted according to the Division's guidelines or according to an appropriate alternative. Please review the attached Raptor Survey Guidelines for raptor survey timing and acquisition of known nest location data from the Natural Heritage Program within the Division of Wildlife Resources.
- In the future, the "Riparian Monitoring Report for Selected Regions within Winter Quarters Canyon" needs to have a summary of results and a discussion on the impacts on the riparian vegetation from undermining.
- Please note that mine maps are not confidential per R645-300-124.300. Confidentiality is limited to the information specified in R645-300-124.310, R645-300-320, and R645-300-124.330.

Thank you for your diligence in completing the Annual Report. If you have any questions, please call me at (801) 538-5325.

Sincerely,



Daron R. Haddock  
Coal Program Manager

DRH/PWB/sqs  
Enclosures

cc: Price Field Office

O:\007005.SKY\WG4061\WG4061 review completion letter.doc



Print Form

Submit by Email

Reset Form

# Annual Report

This Annual Report shows information the Division has for your mine. Submit the completed document and any additional information identified in the Appendices to the Division by **March 30, 2012**. During a complete inspection an inspector will check and verify the information.

## GENERAL INFORMATION

Company Name	Canyon Fuel Company LLC	Mine Name	Skyline Mine
Permit Number	C/007/0005	Permit expiration Date	April 30, 2012
Operator Name	Canyon Fuel Company, LLC	Phone Number	+1 (435) 448-2619
Mailing Address	HC 35 Box 380	Email	ggalecki@archcoal.com
City	Helper		
State	Utah	Zip Code	84526

## DOGM File Location or Annual Report Location

Excess Spoil Piles

- Required  
 Not Required

Refuse Piles

- Required  
 Not Required

Submitted electronically via email on the following dates for the respective quarters: 4/15/11 1st Qtr; 6/22/11 2nd Qtr; 11/1/11 3rd Qtr; 1/9/12 4th Qtr.

Impoundments

- Required  
 Not Required

Submitted electronically via email on the following dates for the respective quarters: 4/15/11 1st Qtr; 6/22/11 2nd Qtr; 11/1/11 3rd Qtr; 1/9/12 4th Qtr.

Other:

## OPERATOR COMMENTS

## REVIEWER COMMENTS

- Met Requirements     Did Not meet Requirements

Reviewed by Priscilla Burton on 6/15/2012. The report filed 4/15/11 states that no waste was hauled to the site during the first quarter. The second quarter refuse pile inspection referenced above as submitted on 6/22/11 was actually received on 7/28/2011. Approximately 13,000 Tons were hauled to the site in the second quarter. Third quarter report submitted on 11/1/11 states that 528 tons/rock from the Winter Quarters Ventilation Facility was hauled to the site and placed in 24 in lifts and compacted. The 4th quarter report submitted on 1/6/12 states that another 3,127 tons were hauled to the site during the 4th quarter. Therefore, a total of 16,655 tons/waste were hauled to the site during the year.

## COMMITMENTS AND CONDITIONS

The Permittee is responsible for ensuring annual technical commitments in the Mining and Reclamation Plan and conditions accepted with the permit are completed throughout the year. The Division has identified these commitments below and has provided space for you to report what you have done during the past year for each commitment. If additional written response is required, it should be filed as an attachment to this report.

### **Title: WASTE ROCK SAMPLING**

**Objective:** To document chemical characteristics and support reclamation plan using less than four feet of cover and to protect surface and groundwater.

**Frequency:** During periods of deposition at the waste rock site.

**Status:** Quarterly sampling, one sample per 2000 tons hauled to the disposal site.

**Reports:** Annual report

**Citation:** MRP, Volume 3, Section 4.4, page 4-30, 2nd paragraph and 1988 Soils Guidelines Table 6.

#### Operator Comments

Samples WR2011-1 through WR2011-8 were submitted using CD format in March 2012.

Reviewer Comments  Met Requirements  Did Not Meet Requirements

Reviewed by Priscilla Burton on 6/15/2012. The refuse analyses were submitted with the Annual Report in March 2012. Certified waste rock inspection reports state that a total of 16,655 Tons were hauled to the site. Seven samples of this material were taken in September. That averages 1 sample/2,380 tons hauled in 2011. [However, one sample taken in March 2012 was included with the 2011 annual reporting, but may represent a portion of the 16,484 tons hauled during the 1st quarter of 2012 (Incoming 04172012). In that case the sampling averaged 1 sample/2,775 tons hauled in 2011]. All of the seven samples indicate non-toxic, non-acid forming sandy loam waste rock from the Winter Quarters project. The March 2012 sample indicates high SAR material was brought to the site in the first quarter 2012.

### **Title: NORTH LEASE PERENNIAL STREAM FLOW MEASUREMENT**

**Objective:** To evaluate the impact of longwall mining on perennial portions of streams in Winter Quarters and Woods Canyons.

**Frequency:** Monthly, June through October and when accessible, one year prior to, during and one year after undermining.

**Status:** Ongoing

**Reports:** Quarterly to database. Submit updates to drawing 2.3.6-2 annually to show the relationship of these monitoring points to the progress of the longwall operation.

**Citation:** MRP, Volume 1A, Page 2-44a, paragraph 5.

#### Operator Comments

Information is submitted electronically on a quarterly basis to the Division database.

Reviewer Comments  Met Requirements  Did Not Meet Requirements

Reviewed by Ken Hoffman June 21: Monitoring results submitted quarterly as required. Requirement for submission of updated drawing 2.3.6-2 and no requirement was found. This will be removed in future annual report requirements.

**Title: MACROINVERTEBRATE SURVEYS**

**Objective:** To determine if mining and mining related activities are impacting the perennial streams located in Woods, Eccles, Burnout and James Canyons.

**Frequency:** Fall and Spring every three years beginning in 2007.

**Status:** 2007 Fall and 2008 Spring reports Complete. Next surveys due in fall 2011/ Spring 2012.

**Reports:** Annual -May be submitted in the 2012 annual report if write up is not complete.

**Citation:** MRP, Appendix A-3, Volume 2, Volume 1A, Section 2.8, pages 2-71, 71A, B,C. Section 2.8, table 2.8-1a

Operator Comments

Due to the amount of lab work necessary to identify and count all the macroinvertebrate species, the surveys were conducted but the reports have not been finalized at this time.

Reviewer Comments  Met Requirements  Did Not Meet Requirements

Please submit the macroinvertebrate reports to the Division as soon as they are available.

**Title: NORTH LEASE VEGETATION SURVEY**

**Objective:** To determine the effects of longwall mining on riparian vegetation along Winter Quarters and Woods Canyon stream channels.

**Frequency:** Baseline survey of entire length of channels in 2005. Survey two years prior and during undermining of channel lengths and follow-up surveys two years after undermining.

**Status:** Ongoing

**Reports:** Annual

**Citation:** MRP, Volume 1A, Section 2.7, pages 2-61d; A-2 volume 2, and A-3 Volume 2

Operator Comments

Submitted electronically using CD format in March 2012.

Reviewer Comments  Met Requirements  Did Not Meet Requirements

Reviewed by Ingrid Campbell (06/14/2012): The survey was conducted by Dr. Patrick Collins of Mt. Nebo Scientific in August 2011. 400 ft spacing was used between transects which differs from the baseline sampling transect distance of 800 ft. Sample sites were located in Section 11 drainage, No-name drainage, Box Canyon, Bobs canyon and Winter Quarters Creek. The report includes qualitative and quantitative data for all sites. The report does not contain a discussion on the possible impacts of mining on riparian vegetation.

## FUTURE COMMITMENTS AND CONDITIONS

The following commitments are not required for the current annual report year, but will be required by the permittee in the future as indicated by the "status" field. These commitments are included for information only, and do not currently require action. If you feel that the commitment is no longer relevant or needs to be revised, please contact the Division.

**Title: FISH SURVEY**

**Objective:** To determine if mining and mining related activities are impacting the perennial streams located in Eccles, and Winter Quarters. Woods, Burnout and James Canyon Surveys are complete.

**Frequency:** In the fall every three years beginning in 2007.

**Status:** 2010 surveys complete. Next survey due in 2013.

**Reports:** Annual

**Citation:** MRP, Volume 1A, Section 2.8, page 2-71.

**Title: TOPSOIL SAMPLING**

**Objective:** To determine fertilizer application rate.

**Frequency:** At final reclamation sample redistributed topsoil for N, P, K, Fe, Mg, Mn, Zn, Ca and pH.

**Status:** At final reclamation

**Reports:** None specified. Suggest verbal communication with Division and lab analyses to be included in bond release application.

**Citation:** MRP, Volume 3, Section 4.5, page 4-32, 2nd paragraph.

**Title: SUBSOIL SAMPLING AT WASTE ROCK SITE**

**Objective:** To provide chemical characteristics of purchased subsoil.

**Frequency:** Once. Sample purchased subsoil for parameters in Table 1 of the Utah 1988 Guidelines.

**Status:** Ongoing with contemporaneous reclamation at the waste rock site.

**Reports:** None specified. Suggest verbal communication with Division and lab analysis to be included in bond release application.

**Citation:** MRP, Volume 3, Section 4.6.4.1, page 4-38a, 3rd paragraph, and page 4-38b.

**Title: AGE-MONITORING OF WATER**

**Objective:** To understand the possible sources of groundwater inflows.

**Frequency:** When inflows of 800 gpm are encountered.

**Status:** No significant inflows in the North Lease.

**Reports:** Immediately notify Division

**Citation:** MRP, Volume 1, page 2-35b, paragraph 2.

**Title: SAMPLING PRIOR TO SLURRY PLACEMENT IN ABANDONED UNDERGROUND WORKINGS**

**Objective:** Protection of groundwater

**Frequency:** Every 450 feet of advance

**Status:** Report if placed slurry in abandoned underground workings.

**Reports:** Notification if parameters are out of compliance with Guidelines for Topsoil and Overburden.

**Citation:** MRP, Volume 2, Incorporation of 97K-1 and Section 1.2 (at the end of section 3.2).

**Title: SAMPLING OF WASTE ROCK IN TEMPORARY STOCKPILES**

**Objective:** Protection of surface and groundwater

**Frequency:** one sample per 2000 tons of temporary stockpiled material if remains in temporary location longer than three months.

**Status:** Ongoing

**Reports:** Not specified. Assumed to be the same as disposal site sampling (previous paragraph on same page.)

**Citation:** MRP, Volume 3, page 4-30, 3rd paragraph, and 1988 Soils guidelines, table 6.

**OPERATOR COMMENTS (OPTIONAL)**

Soil sample analysis for material deposited at the Waste Rock site have been submitted electronically using CD format in March 2012.

**REVIEWER COMMENTS**

Reviewed by Priscilla Burton on 6/15/2012. The March 2012 Annual report does not distinguish between samples taken from a temporary stockpile or that taken at the waste rock site.

## REPORTING OF OTHER TECHNICAL DATA

Please list other technical data or information that was not included in the form above, but is required under the approved plan, which must be periodically submitted to the Division.

Please list attachments:

A Comparison of the Plant Communities Using Color Infrared Aerial Photographs for the North Lease Area 2005-2011; Mt. Nebo Scientific - submitted electronically using CD format in March 2012

Skyline Mine Subsidence Raptor Survey 2011; Western Land Services, Inc. July 25, 2011 - Submitted electronically using CD format in March 2012

### Reviewer Comments

Reviewed by Ingrid Campbell (6/14/2012):

The Skyline Mine Subsidence Raptor Survey was conducted by Western Land Services on the Winter Quarters Canyon subsidence area. Northern Goshawk acoustical surveys were conducted as well as a search for foraging raptors. Existing nest data was obtained from the US Forest Service and were monitored during the July 19, 2011 acoustical survey. No audio or visual responses were elicited from Northern goshawks during the survey and no active raptor nests were documented. Data on known raptor nest locations should be acquired from the Division of Wildlife Resources, Natural Heritage Program, prior to the survey. Surveys for nesting raptors should take place during the second week of May in order to adequately document the nesting activity at known nest locations. All data collected should be provided to the natural heritage program each year. Please follow the Division's Raptor Survey Guidelines.

The comparison of plant communities using color infrared photography was reviewed by the Division as part of the CIR monitoring reduction amendment (task 4096) conditionally approved in June 2012. (See memo internal 06052012.pdf).



# MAPS

Copies of mine maps, current and up-to-date through at least December 31, 2011, are to be provided to the Division as an attachment to this report in accordance with the requirements of R645-301-525.240. The map copies shall be made in accordance with 30 CFR 75.1200 as required by MSHA. Mine maps are not considered confidential.

Map Name	Map Number	Included		Confidential	
		Yes	No	Yes	No
Cumulative Subsidence 1982-2011	2011 Subsidence	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Skyline Mine Mine 3 Levels 2 and 3 As Mined 2011	As Mined 2011	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Skyline Mine Projected Mining 2012-2016	2011 projected mining	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Reviewer Comments  Met Requirements  Did Not Meet Requirements

Reviewed by James Owen on March 10, 2012: Subsidence details included through cumulative subsidence contour map. Current and projected mining maps also provided. Possible technical mistake in projections map (color scheme map vs. legend may need adjustment to make logistic sense).  
 Reviewed by Priscilla Burton on 6/15/2012. Please note that mine maps are not confidential per R645-300-124.300. Confidentiality is limited to the information specified in R645-300-124.310, R645-300-320, and R645-300-124.330.

# **RAPTOR SURVEY GUIDELINES**

## **Utah Coal Regulatory Program**

---

### **Purpose**

The purpose of this document is to:

- A) Provide the coal industries with a guideline for conducting raptor surveys,
- B) Ensure accurate and consistent data acquisition and reporting, and
- C) When completed and endorsed by other agencies used as an Agency Procedure

This is a cooperative document between the Division of Oil, Gas and Mining, the Division of Wildlife Resources and the U.S. Fish and Wildlife Service. This is a working document in which the procedures will be refined and updated as needed.

### **Background**

The Bald and Golden Eagle Protection Act prohibits the "take" of bald and golden eagles. The Act defines "take" to mean kill, molest or disturb. "Disturb"<sup>1</sup> means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3). A violation of the Act can result in a fine of \$100,000 (\$200,000 for organizations), imprisonment for one year, or both, for a first offense. Penalties increase substantially for additional offenses, and a second violation of this Act is a felony.

The Migratory Bird Treaty Act implements four bilateral agreements between the United States and Canada, Mexico, Japan and Russia to protect migratory birds. This Act also prohibits the unlawful taking of migratory birds, which includes any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. Most birds in Utah are protected by the Act as well as their parts, nests, or eggs. All of Utah's raptors are protected by this Act.

Utah law also protects wildlife existing within the state, except those held by private ownership and legally acquired (Utah Code Section 23-13-3). Sections 23-30-3, 23-20-4

---

<sup>1</sup> The term "disturb" under the Eagle Act was recently defined via a final rule published in the Federal Register on June 5, 2007 (72 Fed. Reg. 31332). This term now covers impacts that result from alterations that were started near a nest site during a time when eagles are not present if, upon the eagle's return, those alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and cause injury, death or nest abandonment

---

and 23-20-4.5 make illegal the taking, transporting, selling, purchasing or wanton destruction of protected wildlife.

The Utah Administrative Code Annotated (R645-301-358.300) states that coal mining and reclamation operations are prohibited from the taking of an endangered or threatened species or a bald or golden eagle, its nest, or any of its eggs in violation of the Endangered Species Act of 1973 or the Bald Eagle Protection Act, as amended, 16 U.S.C. 668 et seq. The coal mine operator must avoid and minimize disturbance and adverse impacts to wildlife species protected by state or federal law and describe in the mining and reclamation plan how this will be accomplished (R645-301-333).

Coal Mines have the potential to "take" eagles or other migratory bird species in several ways including direct or indirect disturbances to their nest, roosts, or food sources resulting from mining related disturbances due to:

- Subsidence;
- Surface facilities;
- Exploration drilling; or
- Gas or ventilation holes or openings.

In order to prevent the "take" of eagles and other raptor species in past years the mines in conjunction with DWR have typically conducted annual helicopter surveys. The Division of Oil, Gas and Mining (DOGM) has accepted those surveys, as adequately addressing raptor survey needs. Even though The Division of Wildlife Resources (DWR) is no longer conducting surveys, the mines are still required to provide the necessary information to demonstrate a "take" is being prevented. This document is meant only as a guideline; prior to conducting surveys, a DOGM biologist should be contacted to discuss specific project details. Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (Romin and Muck 2002) guidelines are incorporated into these suggested procedures.

## **General Survey Guidelines**

Survey methodology should be designed to inventory the species expected within the habitat to be disturbed. Aerial or ground survey methodologies target different raptor species and are used to collect different types of data. Appendix C lists recommended survey methodologies and typical nesting substrates for specific raptor species. Most coal operators are interested in nest locations and presence/absence data during the nesting season. Survey methodology should be designed by a qualified raptor biologist and reviewed on a case-by-case basis with DOGM in coordination with DWR, the US Fish and Wildlife Service (FWS), and the surface land management agency. Survey methods will be incorporated into the mining and reclamation plan. To be consistent with State AGRC standards, coordinates should be provided in UTM zone 12, NAD83.

## **Subsidence**

Raptor surveys should be conducted to identify nest locations in areas where subsidence is possible. Aerial surveys are typically conducted.

1. Conduct survey for two years prior to permit issuance to determine resource.
2. Repeat surveys in subsidence zones prior to mining and then again two years post mining or until subsidence has ceased to verify no impact.
3. Surveys are best performed in May to determine nest status.
4. Survey information required,
  - i.) Species
  - ii.) Nest location
  - iii.) Nest status (active, inactive, tended, dilapidated...)
  - iv.) Additional information as shown in Appendix A is desirable but not required.
5. Raptor data are confidential and should not be shared with the public. The data must be submitted to DOGM and DWR. In the future, the data may be directly entered into an online database.
  - i) In an electronic format, suitable for uploading into ArcGIS (shapefiles).
  - ii) In a map format showing mine panels, subsidence boundary, dates of anticipated or completed mining activity, and nest locations indicating species, activity etc.

## **Surface facilities**

Raptor surveys<sup>2</sup> for long-term surface facilities placement should be conducted to identify species, locate nests, winter roosts, and other important habitat so they can be avoided.

1. Conduct spring nesting and winter roosting surveys for three years prior to permit issuance to determine resource.
2. Survey within the spatial buffer of the target species (refer to Romin and Muck, 2002) at the proposed facility.
3. Nesting surveys are best performed in May to determine nest status.
4. Bald Eagle Roost surveys should be conducted in January within winter roosting habitat.
5. Survey information required
  - i) Species
  - ii) Nest location
  - iii) Bald Eagle Roost location
  - iv) Nest status (active, inactive dilapidated...)
  - v) Additional information as shown in Appendix A.
6. The initial survey should be an aerial and ground survey; however, this will depend on terrain of proposed facilities and raptor species targeted. Follow-up surveys may be ground if the status of the nest can be accurately determined.

---

<sup>2</sup> A prey-based survey may also be required, especially if applying for an incidental take permit.

- 
7. A qualified wildlife biologist should be retained to annually inventory and document raptor nesting and winter roosting status within the one-mile disturbance radius.
  8. If a surface facility is inactive before the site is reclaimed another survey will be required prior to the start of reclamation activities. These surveys should include the surface structures such as conveyors and buildings as well as surrounding terrain.

### **Exploration drilling**

Exploration drilling is generally a one-time short duration occurrence. The surface management agency needs to be contacted for specific survey requirements and to determine if existing data are available. If nest locations are known aerial or ground surveys can verify nest status so that appropriate spatial and season buffers can be determined. Generally, plan exploration drilling between August and November to avoid seasonal buffers.

### **Gas or Ventilation Holes or Openings**

1. Conduct spring and winter surveys for one year prior to permit issuance to determine resource.
2. Survey within the spatial buffer of the target species (refer to Romin and Muck, 2002) at the proposed facility.
3. Nest surveys are best performed in May to determine nest status.
4. Bald Eagle Roost surveys should be conducted in January within winter roosting habitat.
5. A prey-based survey may also be required.
6. Survey information required
  - i) Species
  - ii) Nest location
  - iii) Bald Eagle Roost location
  - iv) Nest status (active, inactive dilapidated...)
  - v) Additional information as shown in Appendix A.
7. The initial survey should be an aerial and ground; however this will depend on terrain of proposed facilities and raptor species potentially present. Follow-up surveys may be ground if the status of the nest can be accurately determined.
8. A qualified wildlife biologist should be retained to annually inventory and document raptor nesting and winter roosting status within the one-mile disturbance radius.

## **Protocol**

The following protocol has been developed in consultation with DOGM, DWR and FWS.

**Qualifications:** Individuals responsible for designing and conducting the survey should have a Bachelor or higher degree in Wildlife Biology or a related discipline and experience in raptor behavior and excellent raptor identification skills. The act of surveying has the potential to disturb or molest the species surveyed and the qualified biologist will be responsible to prevent "take" during the survey. Safety of the surveyors and the birds are more important than obtaining all of the data attributes. All surveyors must attend the Utah Raptor Identification and Survey training, held annually by the US Fish and Wildlife Service. (For more information please contact the Division of Oil, Gas and Mining.) Qualified individuals should have a good working knowledge of GIS and GPS tools. Qualification statements or resumes must be submitted to DOGM prior to the survey.

### **Aerial Surveys**

Golden Eagle and cliff nesting raptor surveys need to be initiated as close to May 10 as possible. This date will prevent "take" since eagle chicks have generally hatched and parent birds are less likely to abandon the nest. Surveys need to be completed by June 1 to ensure that the chicks are young enough that they will not be prematurely flushed from the nest by the disturbance.

Survey participants for aerial surveys historically included four members: the pilot, a company representative (scribe), a navigator, and a spotter/identifier (biologist). At least three people should be present. The navigator and spotter need to be qualified individuals as noted in the previous section of this document who can properly identify raptor species.

It is recommended that the navigator use moving-map type GPS technology to navigate during the survey to ensure adequate coverage of the survey area, navigate and identify known nests, and accurately record the location of newly discovered nests. Software that has been proven effective for these types of surveys include: ArcPad, Fugawi, Xmap, and National Geographic Map. These programs should show a topological map of the area, the surveyor's real-time location on the map, the locations of the known raptor nests and the track that the survey has covered.

The spotter/identifier finds new nests and birds; and assists in finding the known nest as the navigator explains its location on the computer. Once the nest is located, the spotter/identifier confirms the species, determines nest status and other information using the terms and data fields listed on the attached tables.

The company representative or scribe ensures that the area within 1 mile of the affected or potentially impacted area is thoroughly surveyed. The scribe records the information

---

listed on the attached table, i.e. nest number, date, time, species, status of the nest, nest type (i.e. cliff, tree...), number of eggs, number of young, age of young, and any additional comments that are deemed necessary, preferably in an electronic format on the GPS.

For active territories, the surveyor(s) must conduct a second survey to gather productivity data. The productivity survey should be conducted when the young have reached acceptable fledging age (51 days old) but have not yet left the nest. All nests in which occupancy or breeding status could not be collected during the presence/absence survey should be revisited at this time. The surveyor(s) must analyze the productivity data by calculating the percent of eagle pairs laying eggs.

GPS track logs should be recorded and submitted to DOGM as well as photographs of the nest. When a new nest not in the database is found, a point of that nest should be taken with a GPS handheld, or the Trimble Laser Pointer. At a minimum, latitude and longitude coordinates must be submitted to DOGM. Each new nest will be assigned an original nest ID # given by DWR.

### **Ground Surveys**

Ground surveys generally target tree and ground nesting species and are used when there is adequate road access. Some species, including Northern Goshawk, Mexican Spotted Owl and Burrowing Owl, require a ground or calling survey. When used to inventory remote or cliff habitat they generally require more time than aerial surveys. Surveyors must obtain a permit from FWS before surveying for Mexican Spotted Owls

Survey methodology should be designed by a qualified raptor biologist and reviewed on a case-by-case basis with DOGM in coordination with DWR, the US Fish and Wildlife Service (FWS), and the surface land management agency. Ground surveys require all data collection as described in the aerial survey.

### **Species Specific Surveys**

See Appendix B for a list of protocols.

## **Data Collection and Formatting**

Surveyors must obtain existing survey data prior to conducting aerial or ground surveys. This information can be obtained by contacting DWR at 801 538 5700 and filling out the requisite release forms. In addition, the applicant needs to contact the Division to verify the necessary location and extent of the survey. This will assist in locating known nests and so that unique identifying numbers can be assigned to new nests.

After field data has been collected all GPS tracks need to be downloaded into separate company or mine files, and all collected nest data needs to be added to the master database.

After all newly collected data and new nest information has been entered into the master database, the data should be imported into ArcGIS and saved as a shapefile or other compatible geospatial file.

Survey data are confidential and should not be shared with the public. The data must be submitted to DOGM in the following formats.

1. In an electronic format, suitable for uploading into ArcGIS.
2. A report with photographs and a map format showing all surface facilities and pertinent raptor use area, an appropriate size buffer (.25-1 mile depending on species), nests indicating species and status.



## BIBLIOGRAPHY

---

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim Golden Eagle technical guidance: inventory and monitoring protocols; and other recommendations in support of eagle management and permit issuance. Division of Migratory Bird Management, U.S. Fish and Wildlife Service.

Romin, L.A. and J.A. Muck. 2002. Utah Field Office guidelines for raptor protection from human and land use disturbances. U.S. Fish and Wildlife Service unpublished report.

---

**APPENDIX A  
RAPTOR SURVEY FORM**

---

