

# *Jonah Interagency Mitigation and Reclamation Office*

## **Off-Site Mitigation Strategic Goals**

### **Background**

In March, 2006, the BLM issued the Jonah Infill Drilling Project Record of Decision (ROD) following extensive analysis in the Final Environmental Impact Statement (FEIS). This decision allowed operators to infill drill and develop new gas wells and ancillary facilities which could result in  $\approx 14,000$  acres of surface disturbance at any one time, or  $\approx 20,000$  cumulative acres over the life of the project. The FEIS analysis indicated on-site mitigation of impacts was inadequate for that level of development. Considering these findings, EnCana Oil & Gas (USA) Inc, and potentially other Operators, committed \$24.5M in compensatory (off-site) mitigation. EnCana designated \$16.5M of the fund be used to mitigate wildlife impacts, while the remaining \$8M could be used to mitigate other resource impacts, perform monitoring, or accomplish other activities. To manage this approach, the ROD created the Jonah Interagency Mitigation and Reclamation Office (JIO). This office, with representatives from Wyoming Department of Environmental Quality (WDEQ), Wyoming Department of Agriculture (WDA), Wyoming Game and Fish Department (WGFD), and the Department of Interior, Bureau of Land Management (BLM) is tasked with implementation and management of the off-site mitigation program.

### **Introduction**

This document provides guidance to potential project proponents by publicizing specific off-site mitigation goals of the JIO, the objectives of those goals, and in some cases potential strategies that could be employed to reach them. The purpose of establishing these goals is two-fold; first, they define what the JIO hopes to attain in terms of overall mitigation of impacts identified in the FEIS and second, they provide a basis for evaluating widely diverse mitigation projects during the selection process. Though certainly not meant to be exclusive in any way, some potential project ideas are also included at the end of this document to further clarify JIO objectives.

It is important to note that all resource impacts identified in the FEIS need not be addressed with off-site mitigation. Where an impact is adequately mitigated on-site, off-site mitigation is unnecessary.

Of those impacts identified in the FEIS analysis, wildlife, air quality, cultural/paleontological and land use (livestock grazing and recreation) contain the most viable opportunities for off-site mitigation projects. Goals, objectives and strategies for each of these resources are addressed in the following sections.

### **Project Evaluation Criteria**

Proposed off-site mitigation projects are evaluated based on their ability to meet the goals identified in this document. Some of the specific criteria used to rank projects (but not all) include the degree to which a project meets one or more goals, its location, methodology/design effectiveness, sustainability, number of cooperators participating, and any assurances provided.

## **WILDLIFE**

The JIO is working with various partners to prioritize areas of potential mitigation within the Green River drainage. Partners involved to date include WGFD, BLM, The Nature Conservancy (TNC), the local sage-grouse working group and others. Objectives of this effort are to identify high-quality mitigation areas by species to maximize mitigative benefits and provide a means to perform habitat assessments for large scale projects prior to approval/implementation. Projects that meet the following guidelines are preferred.

1. Landscape areas predominantly covered by sagebrush communities.
2. Areas providing habitat for the Wyoming Game and Fish Department's sagebrush associated Species of Greatest Concern (SGCN) or other species dependent upon sagebrush for a part of their habitat needs (i.e., crucial range for pronghorn, etc.).
3. Areas of known important Greater Sage-Grouse populations and associated habitats (i.e. refer to regional sage-grouse planning efforts and working groups).
4. Priority habitats identified in the Strategic Habitat Plan (WGFD 2001), and crucial and overlapping crucial ranges for big game, 2-mile sage-grouse lek buffers; nesting/early brood-rearing habitats (where mapped) and/or sage-grouse winter concentration areas (when identified), and other important habitats for sagebrush obligate/dependent wildlife species not identified within other categories.

### **Goal**

*Maintain, preserve and/or enhance up to 90,000 acres of sagebrush-steppe habitat for native wildlife, with emphasis on sage grouse, antelope, and SGCN species.*

### **Objectives**

1. Achieve a landscape mosaic of native vegetation species diversity and successional stages capable of supporting all native wildlife species.
2. Provide a variety of habitat block sizes (successional and/or age classes) designed to support sustainable populations of native wildlife.
3. Provide water sources where needed to support a high distribution of wildlife species across the landscape.
4. Maintain migration corridors sufficient to allow unimpeded seasonal movements of migratory wildlife.
5. Work with various partners to solicit/develop projects that accomplish goals via project proposal submissions.
6. Work with landowners, agencies and other potential partners (permittees, livestock groups, Natural Resource Conservation Service, Soil Conservation Districts, Ducks Unlimited, Rocky Mountain Elk Foundation, various conservation organizations, etc.) to implement various practices to enhance/improve/protect sagebrush habitats and habitat needs for sagebrush dependent/obligate species. Refer to later sections for examples of desirable projects.

## Strategies

1. For each habitat area, plan and implement habitat enhancements or protections on a case-by-case basis, depending on each area's best potential for beneficial results.
2. When considering each habitat action, determine the action's contribution to the larger landscape strategy, to ensure that the result supports landscape-level benefits for the full variety of native wildlife.
3. Use a variety of vegetation and habitat management techniques in order to develop a variety of the most effective methods of achieving beneficial results. Work with other agencies, universities, and landowners to assure that the full range of available expertise is employed, and that a wide range of support is realized.
4. Enhance livestock grazing management through various practices such as water development, fencing, developing grazing management plans (with emphasis on rest-rotation and deferred rotation) where management will provide for improved vegetative health and habitat improvement for both wildlife and livestock.
5. Enhance existing sagebrush communities through various practices including inter-seeding forbs and native grasses in sagebrush communities, improvement of communities with the Lawson aerator, Dixie harrow, etc.
6. Provide enhanced herbaceous vegetation where possible (e.g. adding water for enhancing vegetation for brood-rearing, etc.)
7. Restore/enhance function of intermittent and other drainages, especially those within existing sagebrush communities.
8. Maintain or enhance natural patterns (e.g. seasonal migrations), functions (e.g. cover/food), processes (e.g. fire), and habitat function related to sagebrush and riparian communities.
9. Restore and/or improve big sagebrush and riparian ecosystem health and ecological processes and functions.
10. Maintain/restore/enhance big sagebrush and riparian habitats to ensure a healthy understory of native grasses and forbs, diversity of species, diversity of age classes, and patches of varying size and density to maintain sagebrush dependent wildlife populations.
11. Secure long-term conservation easements from willing landowners where protection and/or management will maintain or improve sagebrush habitats for sagebrush dependent species.
12. Develop forage reserves and associated management agreements in big sagebrush and riparian communities to provide added sagebrush community management flexibility elsewhere.
13. Control noxious and invasive plants in sagebrush communities.

# **Air Quality**

## **Goal**

*Improve conditions outside of the Jonah Field that may adversely affect visibility in nearby Class I airsheds.*

The 1997 Clean Air Act (CAA) amendments declared “as a National Goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas in which impairment results from manmade air pollution.” The CAA gives federal managers the affirmative responsibility, but no regulatory authority, to protect air quality-related values, including visibility, from degradation.

Federal Class I areas are defined in the Clean Air Act as national parks over 6,000 acres and wilderness areas and memorial parks over 5,000 acres, established as of 1977. The nearest Class I areas to the Jonah field are the Bridger and Fitzpatrick Wilderness Areas.

Two types of visible impairment can be caused by emission sources: plume impairment and regional haze. Plume impairment occurs when a section of the atmosphere becomes visible due to the contrast or color difference between a discrete pollutant plume and a viewed background, such as a landscape feature. Regional haze occurs when pollutants from widespread emission sources become mixed in the atmosphere and travel long distances.

Visibility is quantified in terms of the deciview (dv), which is defined as a change in visibility that is perceptible to the average human, and in terms of the standard visible range (SVR), which is defined as the distance that an average human can see. Visibility data are calculated for each day, ranked from cleanest to haziest, and reported into three categories:

- 20% cleanest: mean visibility for the 20% of days with the best visibility
- Average: the annual mean visibility
- 20% haziest: mean visibility for the 20% of days with the poorest visibility

A wide variety of pollutants can impact visibility, including particulate matter, nitrogen dioxide, nitrates (compounds containing NO<sub>3</sub>), and sulfates (compounds containing SO<sub>4</sub>). Fine particles suspended in the atmosphere decrease visibility by blocking, reflecting, or absorbing light.

**Particulate matter (PM)** refers to the small particles (i.e., soil particles, pollen, etc.) suspended in the air that settle to the ground slowly and may be re-suspended if disturbed. Ambient air particulate matter standards are based on the size of the particle. The two types of particulate matter are:

- **PM<sub>10</sub>** (particles with diameters less than 10 micrometers): small enough to be inhaled and capable of causing adverse health effects.
- **PM<sub>2.5</sub>** (particles with diameters less than 2.5 micrometers): small enough to be drawn deeply into the lungs and cause serious health problems. These particles are also the main cause of visibility impairment.

Sources of particulate matter in the gas field include drilling rig engines and fugitive dust emissions due to wind and vehicle traffic.

**Nitrogen dioxide (NO<sub>2</sub>)** is a highly reactive compound formed at high temperatures during fossil fuel combustion. At high concentrations, it can form a red-brown gas. At concentrations in excess of the EPA air quality standard, it is a respiratory irritant; however, all areas of the United States are in compliance with this air

quality standard. During fossil fuel combustion, NO is released into the air which reacts in the atmosphere to form NO<sub>2</sub>. NO plus NO<sub>2</sub> is a mixture of nitrogen gases, collectively called nitrogen oxides (NO<sub>x</sub>). NO<sub>x</sub> emissions can convert to ammonium nitrate particles and nitric acid which can cause visibility impairment and atmospheric deposition. Nitrogen dioxide can contribute to “brown cloud” conditions and ozone formation, and can convert to ammonium (NH<sub>4</sub>), nitrate particles (NO<sub>3</sub>), and nitric acid (HNO<sub>3</sub>). In the gas field, NO<sub>x</sub> is emitted by drilling rig engines, wellhead engines and process burners. It is also emitted during well completion and recompletion.

**Sulfur dioxide (SO<sub>2</sub>)** and **sulfates (SO<sub>4</sub>)** form during combustion from trace levels of sulfur in coal or diesel fuel. Sulfur dioxide also participates in chemical reactions and can form sulfates and sulfuric acid in the atmosphere. In the gas field, the primary source of SO<sub>2</sub> is drilling rig engines.

### **Strategy**

1. Reduce the creation of particulates, NO<sub>x</sub> and sulfates from areas within the Upper Green River Valley.

## **LAND USE/RECREATION MITIGATION**

### **Goal**

*Enhance opportunities for the public to enjoy high quality outdoor recreation experiences through improvements to public access, recreation information, and facility enhancements in five areas providing substantial recreational user benefits.*

### **Objectives**

1. Develop partnerships between industry, private recreation providers, counties, non-governmental organizations, State of Wyoming and Federal agencies that improve recreation opportunities, benefit public health, protect important natural resources and enhance regional tourism.

### **Strategies**

1. Secure public access for recreation purposes where existing access across private, county or state lands does not exist. This includes the acquisition and or negotiation of ROW's, easements and/or agreements.
2. Expand recreation values where significant public benefit would result from the consolidation of public, private, county or state lands.
3. Improve existing recreation trails or assist with the development of appropriate motorized, non-motorized and multiple use trail systems or special use areas.
4. Reduce impacts at existing undeveloped river accesses.
5. Improve public use information products that enhance the enjoyment of recreation opportunities and reduce impacts to natural resources and impacts to private land (maps, signs, brochures, user guides, interpretive sites, web based services etc.).
6. Support public access and facility enhancement projects.

## **LAND USE/LIVESTOCK GRAZING MITIGATION**

### **Goal**

*For affected allotments, promote livestock use in areas outside the Jonah Infill Development Project Area.*

### **Strategy**

1. Enhance livestock grazing management through practices such as water development, fencing, habitat improvement projects, and development of grazing management plans where management will provide for improved vegetation health for livestock.

## **CULTURAL/HISTORIC MITIGATION**

### **Goal**

*Investigate and gather archaeological or paleontological data from three (3) areas surrounding the Jonah Infill Project Area to provide an integrated, holistic and meaningful view of the archaeology and/or paleontology of the Upper Green River Basin.*

### **Objective**

1. To extend understanding of archaeological settlement patterns and paleoenvironmental reconstructions by investigating undisturbed sites.

### **Strategies**

1. Perform proactive archaeological and/or paleontological site investigations in areas of scientific interest surrounding the Jonah Project area.

# **PROJECT IDEAS**

## **WILDLIFE**

### **Large Scale**

1. Acquire grass bank areas that could provide for rest from treatments, and/or provide for greater options for the management of livestock (i.e. rest-rotation, deferred rotation, etc.).
2. Join existing projects where goals are compatible with those of the JIO.
3. Acquire property and establish conservation easements with specific management prescriptions to meet mitigation goals. Resell property to conservation buyer.
  - a. Where properties are acquired that include BLM (and/or other) land use permits, develop a wildlife habitat/livestock management plan for the BLM property prior to reselling the base property.
4. Work with other entities, such as Upper Green River Land Trust, TNC, Rocky Mountain Elk Foundation, pronghorn and sage-grouse interests, etc. to acquire conservation easements that address mitigation goals.
  - a. Management of corporate-owned or controlled lands already under conservation management may be one of the best alternatives to achieve effective, long-term mitigation of oil and gas impacts.
5. Assist local communities with landfill upgrades or management practices that reduce to nominal levels the availability of supplemental food for ravens.

### **Small Scale**

1. Treat sagebrush in mosaic patterns by prescribed burning, chemical treatment (thinning), or mechanical treatment (thinning or mosaics). Complement these treatments with inter-seeding native forbs and grasses and grazing management plans.
2. Implementation of rotational grazing strategies with deferment system and monitoring (could be enhanced by use of temporary cross-fencing and water developments).
3. Enhanced reclamation in areas previously reclaimed to incorporate greater vegetative diversity (especially shrubs and forbs).
4. Increase visibility or otherwise modify fences documented to cause wildlife mortalities, or where needed on important migratory corridors or bottlenecks.
5. Protect (fencing or other protection) natural springs or man-made water sources to maintain flows, extend the life of the water sources and provide herbaceous food and cover.
6. Enhance herbaceous understory diversity and structure within established sagebrush habitats; including re-establishment of native, cool-season bunch grasses and forb species, on a landscape scale.

## **Air Quality**

Some project ideas include, but are not limited to...

1. Paving high traffic roads.
2. Generating a mass transportation system for use to/from high traffic areas in and around the Jonah Field (under the auspices of the “Coordinating transportation planning” portion of the JIO scope of work).
3. Generating carpooling education programs.
4. Replacing wood stoves used by residents in the Upper Green River Valley with newer more efficient wood burning stoves or natural gas stoves.
5. Switching fleet vehicles from diesel to natural gas.

## **RECREATION**

1. Develop managed, OHV special use areas.
2. Rehabilitate soils and vegetation damaged by OHV use.
3. Facilitate the acquisition of public access to important recreation opportunities through third party agreements.
4. Develop a river guide brochure and OHV and/or trail users guide maps.
5. Enhance existing recreation facilities at river, lake and upland sites.
6. Develop recreational user information and or interpretive facilities at important access portals and features with important cultural or natural resource values.
7. Develop new river accesses or improve existing river access sites for improved fishing opportunities and reduced resource degradation.

## **LIVESTOCK GRAZING**

1. Water developments, fencing, and/or vegetation enhancements that promote livestock distribution and utilization over a wider area and reduce concentrated grazing impacts.
2. Improve livestock grazing forage through habitat improvement projects (i.e. vegetation treatments).
3. Develop alternative livestock feeding strategies in lieu of BLM allotment use. These strategies could include: the purchase of hay, use of available grass banks, rental properties and/or open federal allotments.
4. Cost-share other natural resource/wildlife habitat improvement projects. For example, NRCS EQIP and WHIP projects.



5. Development of grazing management plans with associated planning, inventory, and consultation. Grazing management plans associated with public lands will be in support and in consultation with the respective federal agency.

### **CULTURAL/PALEONTOLOGICAL**

1. Perform site investigations of playa lake areas to allow paleoenvironmental reconstructions.
2. Perform site investigations of known high priority or high scientific interest prehistoric areas to better understand the dynamics of site location, preservation and utilization in the general area of Jonah.
3. Perform geomorphology studies in the general area of Jonah.
4. Enhance public education by establishing appropriate interpretation sites and/or products.