

# CHECKLIST ENVIRONMENTAL ASSESSMENT

Project Name: Falcon 2759 12-16H Well	Proposed Implementation Date: 5/15/11
Proponent: Oasis Petroleum North America, LLC-Lease Operator.	
Type and Purpose of Action: Oasis is proposing to drill a Horizontal Wildcat in the Bakken Formation.	
Location: SESW 200' FNL & 2600'FWL Section 16, T27.0N R59.0E	County: Sheridan

## I. PROJECT DEVELOPMENT

<p>1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED: Provide a brief chronology of the scoping and ongoing involvement for this project.</p>	<p>Board of Oil and Gas received a request to drill. The DNRC/TLMD was petitioned to drill a well under the terms and conditions of the State of Montana lease # OG-35760-05. The proposal to drill the well consist of the construction of road (2000' on fee land, 2100' on State), and the construction of a well pad Oasis provided a copy of the surface damages settlement signed by the surface owner and the deeded land owner.</p> <p>On April 5, and April 19, 2011, DRNC staff performed an inspection. The inspection encompassed the proposed road, well pad, and any other areas to be disturbed.</p> <p>DNRC staff submitted the opportunity to comment on the proposed location to FWP. No comments were returned.</p>
<p>2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:</p>	<p>Montana Board of Oil and Gas</p>
<p>3. ALTERNATIVES CONSIDERED:</p>	<p>Grant permission for Oasis to construct the well using mitigation measures to minimize the disturbance impacts.</p> <p>Deny permission for Oasis to construct the well and require them to reclaim the disturbed area back to original condition.</p>

## II. IMPACTS ON THE PHYSICAL ENVIRONMENT

RESOURCE	[Y/N] POTENTIAL IMPACTS
	<p>N = Not Present or No Impact will occur. Y = Impacts may occur (explain below)</p>
4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:	General Discussion: The well location on native

II. IMPACTS ON THE PHYSICAL ENVIRONMENT	
<p>Are fragile, compactible or unstable soils present? Are there unusual geologic features? Are there special reclamation considerations?</p>	<p>rangelands that have not had mechanical disturbance Soils are class IV, V, and VI soil series.</p> <p>Action: The action alternative is not anticipated to permanent change the soil quality, stability or moisture conditions. Surface soil layers will be disturbed.</p> <p>Action Mitigation: Stockpile the organic surface soil layers in such a manner that they will be protected from wind and water erosion. Redistribute these stockpiled soils evenly across all disturbed areas that are disturbed that are not going to be permanently utilized as a road or well.</p> <p>No-Action: There will be no impacts to these attributes of the landscape.</p>
<p>5.WATER QUALITY, QUANTITY AND DISTRIBUTION: Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality?</p>	<p>The area surrounding the well location and road is highly dissected by ephemeral draws. These draws move surface water during extreme weather periods. A developed spring is located on the State land and is a constant water source.</p> <p>Action: By following the Board of Oil and Gas regulatory regulations, water quality, quantity, and distribution will not be influenced. The construction of the roads will displace the movement of water.</p> <p>Mitigation: The proponent will construct a reservoir as depicted in the attached map to store water and transport water across the disturbed crossing location. All ephemeral draws will have culverts located in the crossings. .</p> <p>No-Action; There will be no impacts to these attributes of the landscape</p>
<p>6.AIR QUALITY: Will pollutants or particulate be produced? Is the project influenced by air quality regulations or zones (Class I airshed)?</p>	<p>In general, the air quality of this region would be considered good. There are no significant activities that are degrading air quality health in this area outside of the normal farming/ranching activities.</p> <p>Action: Air quality will be temporarily negatively impacted by implementing the proposed action.</p> <p>No-Action: There will be no impacts to these attributes of the landscape</p>
<p>7.VEGETATION COVER, QUANTITY AND QUALITY: Will vegetative communities be permanently altered? Are any rare plants or cover types present?</p>	<p>The vegetative community is composed of native species. Native plant species associated with Silty, Thin Hilly, and overflow range sites are located on</p>

II. IMPACTS ON THE PHYSICAL ENVIRONMENT	
	<p>the tract of land to be disturbed. There are 447 plant "Species of Concern" that may occur on this tract of land according to the NRIS database.</p> <p>Action: The proposed action is not anticipated to influence this landscape. No "Species of Concerns" (see species list in GUO well file, available upon request) plants have been recorded by field staff to be present on this tract of land. Vegetation will be temporarily altered on all disturbed areas:</p> <p>Mitigation: Require proponent to seed disturbed areas to a native grass/for mixture:</p> <ol style="list-style-type: none"> <li>1. Western Wheatgrass, 6# PLS/AC</li> <li>2. Slender Wheatgrass, 4# PLS/AC</li> <li>3. Green Needle Grass 2# PLS/AC</li> <li>4. Blue phlax, 0.25# PLS/AC</li> </ol> <p>No-Action: There will be no impacts to these attributes of the landscape</p>
<p>8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS: Is there substantial use of the area by important wildlife, birds or fish?</p>	<p>This area is not known to have substantial use by important wildlife, birds, or fish. . There are 5 (see species list in GUO well file, available upon request) animal "Species of Concern" that may occur on this tract of land according to the NRIS database.</p> <p>Action: Implementation of this action is not anticipated to affect important wildlife, birds or fish.</p> <p>No-Action: There will be no impacts to these attributes of the landscape</p>
<p>9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES: Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Sensitive Species or Species of special concern?</p>	<p>See Species of concern discussion under item 7 and 8. FWP did not identify in habitat issues for this tract of land.</p> <p>Action: Implementation of this action will not affect endangered, fragile or limited environmental resources.</p> <p>No-Action: Implementation of this action will not affect unique, endangered or fragile limited resources.</p>
<p>10. HISTORICAL AND ARCHAEOLOGICAL SITES: Are any historical, archaeological or paleontological resources present?</p>	<p>A Class 3 inventory was performed by Ethnoscience, Inc. with the results of that inventory suggesting that no artifacts would be disturbed.</p>

II. IMPACTS ON THE PHYSICAL ENVIRONMENT	
	<p>Action: No known archaeological sites are known to exist.</p> <p>No-Action: Implementation of this action will not affect archeological or historical sites.</p>
11.AESTHETICS: Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light?	<p>Action: It is adjacent to a county road and will be highly visible.</p> <p>No-Action: Implementation of this action will not affect the aesthetics.</p>
12.DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY: Will the project use resources that are limited in the area? Are there other activities nearby that will affect the project?	<p>Action: The project will not use resources that are limited in this area.</p> <p>No-Action: Implementation of this action will not affect the demands on environmental resources of the land.</p>
13.OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA: Are there other studies, plans or projects on this tract?	<p>No documents are known to exist</p> <p>Action: Implementation will not affect other environment plans or studies.</p> <p>No-Action: No action will take place.</p>

III. IMPACTS ON THE HUMAN POPULATION	
RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES
14.HUMAN HEALTH AND SAFETY: Will this project add to health and safety risks in the area?	<p>Action: Temporary human health and safety risks will be added by the implementation of this project.</p> <p>No-Action: No human health or safety risk will be added because no action will be taking place.</p>
15.INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION: Will the project add to or alter these activities?	<p>Action: Implementation will add to industrial activities while decreasing the agricultural value activities of this land. Completion of the well into a production status will add to private and state mineral estate royalties as well as enhance the county, state, and local school district royalties.</p> <p>No-Action: By not implementing this action, the industrial production of the land will not be increased while the agricultural activities will remain the same.</p>
16.QUANTITY AND DISTRIBUTION OF EMPLOYMENT: Will the project create, move or eliminate jobs? If so, estimated number.	<p>Action: the Quantity of employment opportunities will increase.</p> <p>No-Action: Employment opportunities will not be</p>

	enhanced.
17.LOCAL AND STATE TAX BASE AND TAX REVENUES: Will the project create or eliminate tax revenue?	Action: Completion of the well into a production status will add to private and state mineral estate royalties as well as enhance the county, state, and local school district royalties  No-Action: By not implementing this project, State, local, and Trust revenues will not be increase.
18.DEMAND FOR GOVERNMENT SERVICES: Will substantial traffic be added to existing roads? Will other services (fire protection, police, schools, etc) be needed?	Action: No demands on government services will be required by this project.  No-Action: Government services will not be enhanced.
19.LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS: Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?	Action: The zoning regulations for this area will not be impacted.  No-Action: The zoning regulations for this area will not be impacted.
20.ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES: Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract?	Action: There are no wilderness areas in this vicinity. The recreational opportunities will not be impacted due to the fact that the surrounding surface owner (fee lands) controls recreational opportunities.  No-Action: No impacts to the quality of recreation and wilderness activities will take place.
21.DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING: Will the project add to the population and require additional housing?	Action: No additional housing demands are anticipated.  No-Action: No additional housing demands are anticipated.
22.SOCIAL STRUCTURES AND MORES: Is some disruption of native or traditional lifestyles or communities possible?	Action: No disruption of native or traditional lifestyles is anticipated.  No-Action: No disruption of native or traditional lifestyles is anticipated.
23.CULTURAL UNIQUENESS AND DIVERSITY: Will the action cause a shift in some unique quality of the area?	Action: No cultural uniqueness or diversity quality shift is anticipated.  No-Action: No cultural uniqueness or diversity quality shift is anticipated.
24.OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:	Action: None  No-Action: None.

R. Hoyt Richards

IV. FINDING	
25. ALTERNATIVE SELECTED:	Action
26. SIGNIFICANCE OF POTENTIAL IMPACTS:	No Significant Impact
27. Need for Further Environmental Analysis:  [ ] EIS      [ ] More Detailed EA      [ X] No Further Analysis	

EA Checklist Approved By: Clive Rooney, NELO Area Manager  
Name Title

s/Clive Rooney / s

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Signature

Date: May 4, 2011



## Drainage Crossing Design

### Project Description

Oasis Petroleum North America proposes to access a drill pad location by means of crossing an existing intermittent drainage with an up-gradient spring. The surface lessee of the state tract has expressed a desire to create storm runoff storage of approximately 20,000 cubic feet in conjunction with the drainage crossing. As a result of the desires of both the surface and mineral lessee, the State has prepared drainage crossing design to meet the needs of the surface lessee while providing some guidance as to what the State would like to see for drainage crossing specifications at this site.

### Design Criteria

### Soils Analysis

By using the NRCS Web Soil Survey information, soils existing in the project watershed were inventoried and found to have poor engineering and structural properties for road construction due to the large percentage of fines present. As a result, the State recommends that soil of suitable base course specification be imported from a different location for the construction of the crossing. Included below is a reference specification that offers acceptable structural properties for road construction standards. A suitable pit run material that closely matches (within 10%) the specifications below could also be used.

### Specifications for Imported Base/Sub Base Road Fill Material

Table of Gradations					
Percentages by weight passing square mesh sieve					
Passing	4" Minus	3" Minus	2.5" Minus	2" Minus	1.5" Minus
4" sieve	100%				
3" sieve		100%			
2.5" sieve			100%		
2" sieve				100%	
1.5" sieve					100%
#4 sieve	25-60%	25-60%	25-60%	25-60%	25-60%
#200 sieve (not more than)	2-12%	2-12%	2-12%	2-12%	2-12%

It is recommended that the sub base course fill material be compacted in lifts of no greater than 6". A minimum of one foot of cover should be placed and compacted over the top of the culvert. Surfacing should comprise of 3" of scoria or other suitable road surfacing material.

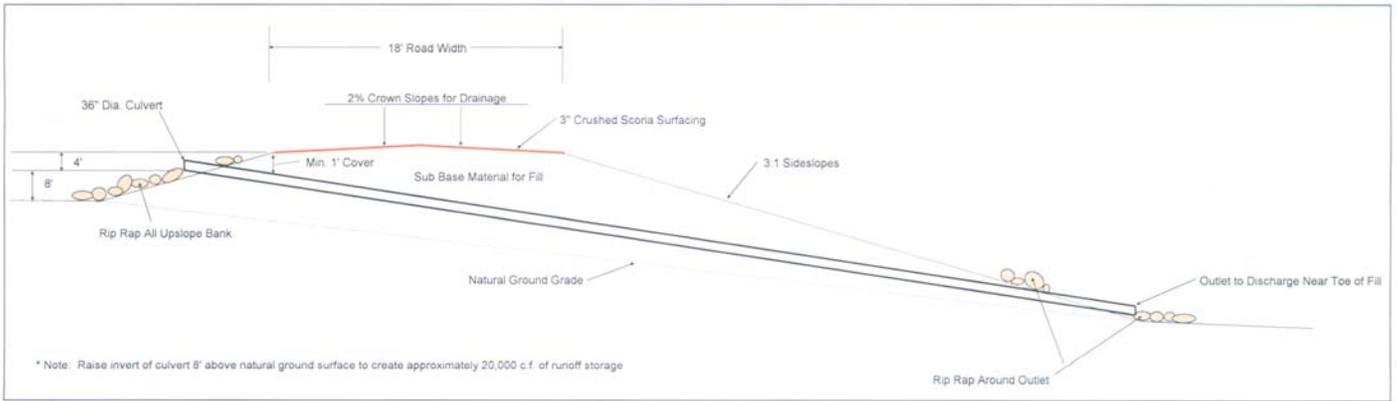
## Hydrological Analysis

The watershed up-gradient of the crossing includes approximately 823 acres in which most (70%) of the soils are classified as hydrologic group C and the rest fall in group B. This translates into high storm runoff during storm events. Using the Win TR-55 storm model, runoff from a 10-yr, 24 hour storm frequency is 205 cfs. In the event of a larger storm event such as the 10-year storm, a 36" culvert is specified to convey this runoff flow in order to prevent the road from washing out. The culvert invert should be placed 8' in elevation above the natural ground elevation in order to create the desired runoff storage up-gradient of the crossing. Rip rap material should be placed on the up-gradient fill to prevent against bank erosion. The outlet of the culvert should be placed near the toe of the fill and have sufficient rip rap surrounding it to prevent against back-cutting the bank. A cross-section of the crossing has been included with this report.

## Revegetation

At the onset of excavation, topsoil should be stockpiled from areas to be disturbed during construction. Once construction is complete, topsoil should be evenly spread over altered soils and newly constructed embankments. The disturbed areas should then be revegetated using a seed mixture approved by the Glasgow Unit office of the DNRC Trust Land Management Division.

Cross-Section of Drainage Crossing and Culvert



# **Falcon 2759 12-16H: A Class III Cultural Resource Inventory of a Proposed Oil Well in Roosevelt County, Montana**

Prepared by

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Prepared for

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April 2011

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## 1.0 INTRODUCTION

Oasis Petroleum North America LLC (Oasis) proposes to construct a well pad and an access road south of Bainville, Montana. The project area is located on land administered by the Department of Natural Resources and Conservation (DNRC) within Section 16, T27N R59E, Roosevelt County, Montana (Figure 1). Oasis contracted Ethnoscience, Inc., (Ethnoscience) to complete the necessary Class III cultural resource investigation.

The proposed well pad inventory area measures 310 feet north-south by 410 feet east-west (Figure 2). The proposed well pad access road inventory corridor measures 100 feet wide by 2,625 feet long. The total inventory area was 8.5 acres. Well pad access will be via an unimproved dirt road that is periodically bladed. The specific vertical and horizontal ground disturbance of the proposed well pad and access road remain undetermined.

## 2.0 ENVIRONMENT

The project area is located within gently rolling prairie with knolls and shallow depressions dissected by a fork of Deer Creek and other minor drainages. The topography within the project area is the result of glacial activity characterized by a thin mantle of glacial drift (USDA n.d.).

The geology and soils pertinent to cultural resources within the project area are those which were deposited during the Quaternary period, including the Pleistocene epoch (1.8 million to 12,000 years ago) and Holocene epoch (12,000 years ago to the present). The project area is located within the glaciated Missouri Plateau of the Great Plains Province. Glaciers left behind soils and rock, depositing it unevenly over the project area as unsorted glacial drift. Glacial drift is a general term used to denote all deposits of glacial origin. Most of the project area is covered with a fairly smooth layer of unsorted clay, sand, gravel and cobbles. The depth of the till layer varies from several hundred meters in upland areas to shallow deposits near the Missouri River (Alt and Hyndman 1986).



Figure 1. Map of Project Area



*Figure 2. Overview of proposed well pad location, view to the northwest.  
The well pad center stake is visible near the center of the photo.*

Upland areas contain glacial features such as mounds, ridges, and basins. This knob-and-kettle terrain contains small hills of till interspersed with depressions that collect and hold water. This type of glacial topography was important to the prehistoric and historic habitation of the area. Many of the rounded hilltops resulting from kames and eskers contain prehistoric cairns, and some were used for camp sites. The seasonal water that accumulates in the depressions or kettles also attracted prehistoric groups. These wetlands attracted wildlife and were sources of fresh water. Numerous tipi ring sites exist on slightly elevated ground adjacent to the kettles. Glacial till also contains workable cryptocrystalline (e.g. chert, flint, quartzite and petrified wood) material. Areas with exposed till were often quarry sources for prehistoric groups (Mandelko et al. 2011).

Soil characteristics have several consequences for human occupation of the study area. During the historic period, Euro-American settlers were attracted to the productive soils

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present in the area and the gentle topography. Generally, the upland soils in this area are suitable for rangeland (USDA n.d.). Rangeland is composed of mixed-grass prairie used for livestock grazing and wildlife habitat.

The project area is associated with a temperate grasslands biome. In undisturbed areas, vegetation is dominated by mixed prairie grasses, which include needle-and-thread grass, blue grama grass, and western wheatgrass (USDA n.d.). There were few trees and shrubs present along a tributary of Deer Creek, however these were not identified.

Fauna present throughout the region prior to widespread cultivation and fencing included bison, elk, deer, pronghorn, badger, beaver, and river otter. The Euro-American fur traders were attracted by many of these animals, significantly reducing their populations in the nineteenth century. Widespread cultivation by Euro-American immigrants further reduced habitat for many of these animals. Deer and pronghorn remain in large numbers throughout the area. Birds are also prevalent throughout the area. Roosevelt County is part of a major migratory path known as the Central Flyway. Many migratory avian species pass through the area during the spring and fall (USFW 2011).

### **3.0 METHODS**

Pre-fieldwork preparation included a search of the Montana State Historic Preservation Office (SHPO) site file and report databases (Appendix) and a search of the National Register of Historic Places (NRHP) site database. An examination of General Land Office (GLO) maps and United States Geological Survey (USGS) 7.5 minute series topographic maps of the inventory area was also done to identify potential site leads in the inventory area.

The Class III inventory of the project area was conducted by Ethnoscience archaeologist Sierra Mandelko on April 5, 2011. Additionally, Hoyt Richards of the DNRC accompanied Ms. Mandelko in the field. Snow covered approximately 30 percent of the inventory area, primarily within drainages and north-facing slopes (Figure 3). Vegetation limited ground surface visibility within the project area to 15-30 percent. The inventory was conducted

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using pedestrian transects spaced at no more than 30 meter intervals to identify surface visible artifacts and features 50 years of age or older. No subsurface testing was conducted during the inventory. The total inventory area was 8.5 acres.



*Figure 3. Overview of proposed access road, view to the east.*

## **4.0 PREVIOUS INVESTIGATIONS**

No previous cultural resource inventories were conducted within the project area. Department of Natural Resources and Conservation archaeologist Patrick Rennie noted a site lead in the northeast-northeast of Section 16, T27N R59E, Roosevelt County; but he did not elaborate on the lead site type (Patrick Rennie, personal communication 2011).

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## 5.0 RESULTS

No cultural resources were encountered during the inventory. The inventory area consisted of native prairie vegetated with bunch grasses and forbs, and indeterminate trees and shrubs along the creek (Figure 4). Overall field conditions allowed for adequate identification of surface visible sites.



*Figure 4. Overview of proposed access road, view to the west.*

## 6.0 CONCLUSION

Ethnoscience inventoried 8.5 acres of land administered by the DNRC in the northeast-northeast of Section 16, T27N R59E, Roosevelt County, Montana. No cultural resources were identified within the inventory area. Based on the results of this investigation, Ethnoscience recommends no additional cultural resource work is necessary for this project.

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## 7.0 REFERENCES CITED

Alt, David and Donald Hyndman

1986 *Roadside Geology of Montana*. Mountain Press Publishing Company. Missoula MT.

Mandelko, Sierra, Jonathan Hardes, Jennifer Thomas and Renea Martinson.

2011 *Vantage Pipeline: A Class III Cultural Resource Inventory of Divide and Williams Counties, North Dakota*. Prepared by Ethnoscience, Inc. Billings, MT.

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n.d. *Soil Survey of Roosevelt and Daniels Counties Montana*. A publication of the National Cooperative Soil Survey.

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2011 *Information on Migratory Birds*. Electronic Document (<http://central.flyways.us/>) Accessed 04/06/11.



