

**VERITAS DGC LAND**  
**HAY RESERVOIR 3D GEOPHYSICAL PROJECT**  
**ENVIRONMENTAL ASSESSMENT**

**Bureau of Land Management**  
**Rock Springs Field Office**  
**Rawlins Field Office**

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**WY-040-EA02-133**

**BLM Case No.: WY-040-OG02-04**

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## TABLE OF CONTENTS

<b>1.0 INTRODUCTION.....</b>	<b>1</b>
1.1 Purpose and Need.....	1
MAP 1 – General Location Map .....	2
1.2 Conformance with Land Use Plans.....	3
1.2.1 Relationship to Plans, Statutes and Regulations .....	3
1.2.3 Public Involvement.....	4
<b>2.0 ALTERNATIVES .....</b>	<b>4</b>
2.1 Proposed Action.....	4
MAP 2 – Project Map.....	5
2.1.1 Applicant Committed Measures Including BLM Standard Operating Procedures.....	7
2.2 No Action Alternative .....	13
2.3 Alternatives Considered but Eliminated from Detail Study.....	13
<b>3.0 AFFECTED ENVIRONMENT .....</b>	<b>14</b>
3.1 Cultural/Historic Resources.....	15
3.2 Native American Religious Concerns .....	15
3.3 Noxious/Invasive Species .....	15
3.4 Threatened, Endangered, Proposed, Candidate Species .....	15
3.6 Water Resources.....	17
3.7 Noise, Hazardous Waste, Safety Issues.....	17
3.8 Fluid Minerals.....	17
3.9 Paleontological Resources.....	19
3.10 Recreation .....	19
3.11 Sensitive Species.....	19
MAP 3 – Producing Wells.....	19
Map 4 – Wildlife Data .....	20

<b>3.12</b>	<b>Socio-Economic Considerations .....</b>	<b>21</b>
<b>3.13</b>	<b>Soils.....</b>	<b>21</b>
<b>3.14</b>	<b>Vegetation .....</b>	<b>21</b>
<b>3.15</b>	<b>Visual Resources.....</b>	<b>21</b>
<b>3.16</b>	<b>Livestock/Range.....</b>	<b>21</b>
<b>3.17</b>	<b>Wild Horses.....</b>	<b>22</b>
<b>3.18</b>	<b>Wildlife.....</b>	<b>22</b>
<b>4.0</b>	<b>ENVIRONMENTAL CONSEQUENCES.....</b>	<b>22</b>
<b>4.1</b>	<b>Cultural/Historical Resources .....</b>	<b>22</b>
4.1.1	Proposed Action .....	22
4.1.2	No Action Alternative .....	23
<b>4.2</b>	<b>Noxious/Invasive Plants .....</b>	<b>23</b>
4.2.1	Proposed Action .....	23
4.2.2	No Action Alternative .....	23
<b>4.3</b>	<b>Native American Religious Concern.....</b>	<b>23</b>
4.3.1	Proposed Action .....	23
4.3.2	No Action Alternative .....	23
<b>4.4</b>	<b>Water Resources.....</b>	<b>24</b>
4.4.1	Proposed Action .....	24
4.4.2	No Action Alternative .....	24
<b>4.5</b>	<b>Noise, Hazardous Waste, Safety Issues.....</b>	<b>24</b>
4.5.1	Proposed Action .....	24
4.5.2	No Action Alternative .....	25
<b>4.6</b>	<b>Wilderness.....</b>	<b>25</b>
4.6.1	Proposed Action .....	25
4.6.2	No Action Alternative .....	25
<b>4.7</b>	<b>Fluid Minerals .....</b>	<b>25</b>
4.7.1	Proposed Action .....	25
4.7.2	No Action Alternative .....	25
<b>4.8</b>	<b>Livestock/Range .....</b>	<b>25</b>
4.8.1	Proposed Action .....	25
4.8.2	No Action Alternative .....	26
<b>4.9</b>	<b>Paleontological Resources.....</b>	<b>26</b>
4.9.1	Proposed Action .....	26
4.9.2	No Action Alternative .....	26
<b>4.10</b>	<b>Recreation .....</b>	<b>26</b>

4.10.1	Proposed Action.....	26
4.10.2	No Action Alternative.....	26
<b>4.11</b>	<b>Sensitive Species .....</b>	<b>27</b>
4.11.1	Proposed Action.....	27
4.11.2	No Action Alternative.....	27
<b>4.12</b>	<b>Socio-Economic Considerations.....</b>	<b>27</b>
4.12.1	Proposed Action.....	27
4.12.2	No Action Alternative.....	28
<b>4.13</b>	<b>Soils.....</b>	<b>28</b>
4.13.1	Proposed Action.....	28
4.13.2	No Action Alternative.....	28
<b>4.14</b>	<b>Vegetation .....</b>	<b>28</b>
4.14.1	Proposed Action.....	28
4.14.2	No Action Alternative.....	28
<b>4.15</b>	<b>Visual Resources.....</b>	<b>29</b>
4.15.1	Proposed Action.....	29
4.15.2	No Action Alternative.....	29
<b>4.16</b>	<b>Wild Horses.....</b>	<b>29</b>
4.16.1	Proposed Action.....	29
4.16.2	No Action Alternative.....	29
<b>4.17</b>	<b>Wildlife.....</b>	<b>29</b>
4.17.1	Proposed Action.....	29
4.17.2	No Action Alternative.....	29
<b>4.18</b>	<b>Mitigation Measures .....</b>	<b>29</b>
<b>5.0</b>	<b>CUMULATIVE AND RESIDUAL EFFECTS.....</b>	<b>30</b>
5.1	Proposed Action.....	30
5.2	No Action.....	30
<b>6.0</b>	<b>CONSULTATION AND COORDINATION .....</b>	<b>31</b>
<b>7.0</b>	<b>REFERENCES.....</b>	<b>33</b>
	<b>APPENDIX A - NOTICE OF INTENT (NOI) AND AMENDMENTS.....</b>	<b>35</b>

## 1.0 INTRODUCTION

Veritas DGC Land Incorporated (Veritas) filed a Notice of Intent in December 2001, to conduct a 3D seismic operation on public lands in the Rock Springs and Rawlins Field Offices. The project boundary was revised several times with the last revision in October 2003. The revised project area covers 279 square miles (Map 1). The project is approximately 24 miles by 19 miles and covers approximately 178,560 acres. Of the total acreage in the project area, 164,352 acres are BLM-administered public land, 9,728 acres are state-owned land, and 4,300 acres are private land. About 70% of the project is located within the administrative boundary of the Rawlins Field Office. The remaining lands are within the administrative boundary of the Rock Springs Field Office.

Actual surface use by the proposed project would be restricted to 100-foot corridors along the source lines and small staging and survey base station areas. A map showing the exact proposed locations of source and receiver points is on file at the BLM Rock Springs Field Office (RSFO). Portions of the project occurring on state and private lands are not subject to BLM authorization. Legal descriptions of all lands affected by the proposed project include:

T22N R96W Sections 2-6  
T22N R97W Sections 1-5

T23N R95W Sections 5, 6  
T23N R96W Sections 1-12, 14-23, 26-35  
T23N R97W Sections 1-7, 9-16, 19-30, 32-36  
T23N R98W Sections 1-5, 8-11

T24N R95W Sections 2-36  
T24N R96W Sections All  
T24N R97W Sections All  
T24N R98W Sections All  
T24N R99W Sections 1, 12

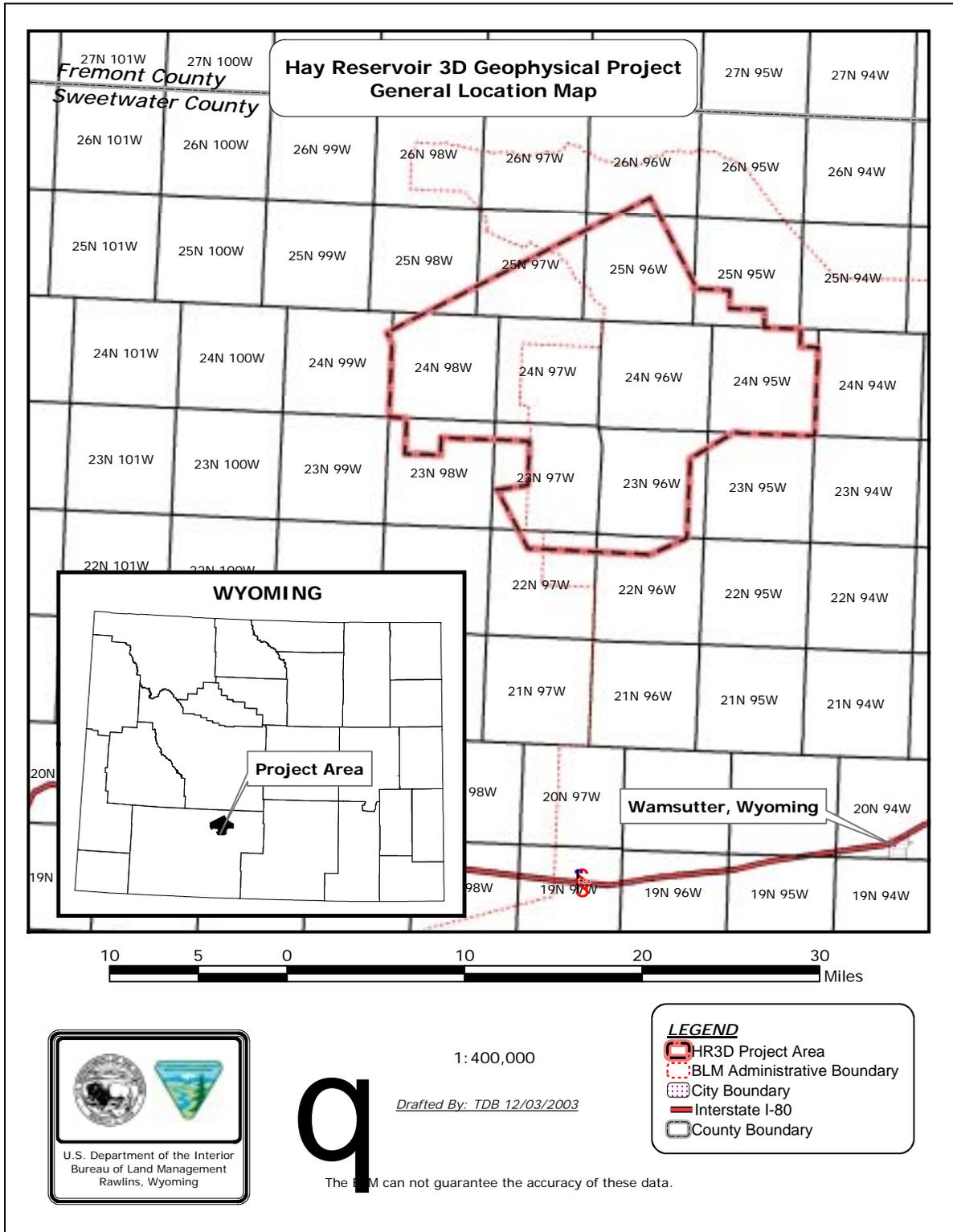
T25N R95W Sections 29-34  
T25N R96W Sections 2-11, 13-36  
T25N R97W Sections 11-16, 19-36  
T25N R98W Sections 25, 26, 34-36

Sixth Principal Meridian, Sweetwater County, Wyoming

### 1.1 Purpose and Need

The Hay Reservoir 3D Project (HR3D) is needed to acquire and evaluate subsurface geological data for possible further development of oil and gas reserves. The proposed project overlies a known hydrocarbon-bearing geological structure with numerous producing wells located within

# MAP 1 – General Location Map



the project area. All federal minerals within the HR3D have been leased for oil and gas development or are available for lease. Well drilling in portions of the HR3D project area is on-going. The proposed HR3D project is designed to collect subsurface data with minimal surface disturbance; this should enable wells to be drilled with a much greater probability of tapping producible hydrocarbons than is attainable without 3D geophysical exploration. Completion of the project should result in the drilling of fewer 'dry holes' in the future, eliminating or minimizing the associated surface disturbance.

## **1.2 Conformance with Land Use Plans**

The proposed action is subject to the Green River Resource Management Plan (GRRMP) Record of Decision approved October 1997, Sweetwater County, Wyoming. The RSFO, as required by 43 CFR 1610.5, has determined that the proposed action, with the modifications herein applied, is in conformance with the decisions, guidelines, terms and conditions of this land use plan (p 15).

A portion of the proposed action also lies within the Red Desert Watershed Management Area (RDWA) of the RSFO. The objective for managing the RDWA is to manage for all resource values with emphasis on protection of visual, watershed, and wildlife resources. Management actions for the RDWA allow for surface disturbing activities, mineral exploration and development subject to the guidelines found in the GRRMP.

The proposed action is also subject to the the Great Divide Resource Management Plan (GDRMP) approved on November 8, 1990. The plan was reviewed and determined that the proposed action is in conformance with the land use plan decisions, guidelines, terms and conditions as required by 43 CFR 1610.3.

Both RMPs allow for vehicle travel off-road to accomplish necessary tasks, provided such travel would not result in resource damage. Following approval by the BLM, surveyors, biologists, and archeologists working on project planning and inventories, as well as geophysical crews troubleshooting receiver lines, could conduct necessary tasks under these conditions. As specified under the proposed action, ATV traffic anticipated along receiver lines would consist of an estimated 2-3 non-overlapping passes if the MRX recording system were used, and an estimated 4-6 non-overlapping ATV passes if the RSR recording system were used.

The development of this project would not affect the achievement of the Wyoming Standards for Healthy Rangelands (August 1997).

### **1.2.1 Relationship to Plans, Statutes and Regulations**

The proposal falls within the general cumulative impact assessment prepared for the Continental Divide/Wamsutter II Natural Gas Project which recognized on-going and future exploration and development of fluid minerals.

This environmental assessment was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended and the Mineral Leasing Act of 1920, as amended (Code of Federal Regulations at 43 CFR 3150).

The proposed action is in compliance with the State of Wyoming Land Use Plan (1979) and Sweetwater County Land Use Plan (1996) and complies with other relevant federal, state, and local laws and regulations.

### **1.2.3 Public Involvement**

The BLM issued a news release on April 30, 2002, allowing a 30-day comment period on the proposal. The news release was published in the local paper (Rock Springs Rocket-Miner) and the statewide newspaper (Casper Star Tribune). Seven comment letters were received in response to the news release.

Issues brought forth during the scoping period include:

- Benefits of seismic operations to reduce unnecessary surface disturbance;
- Socio-economics;
- Cultural resources and Native American concerns including protection of traditional plants and wildlife (burrowing animals);
- Citizen's wilderness proposal;
- Obtaining necessary state and local permits; and
- Wildlife including Red Desert antelope herd, greater sage-grouse leks and nesting areas,
- Listed, proposed for listing, and candidate plant and animal species including black-footed ferret, bald eagle, mountain plover, blowout penstemon, Ute ladies'-tresses, Platte River species, migratory birds and raptors.

Certain issues brought forth during public scoping do not apply to this action or the regulatory requirements have changed. The following issues, as well as the rationale for eliminating them, will not be given consideration in this analysis.

- Citizen's wilderness proposal. Instruction Memorandum 2003-195 rescinded policy guidance for wilderness review and land use planning.
- Mountain plover. This species is no longer defined as a species proposed for listing by the U.S. Fish and Wildlife Service per August 8, 2003. The BLM continues to treat this species as a sensitive species.

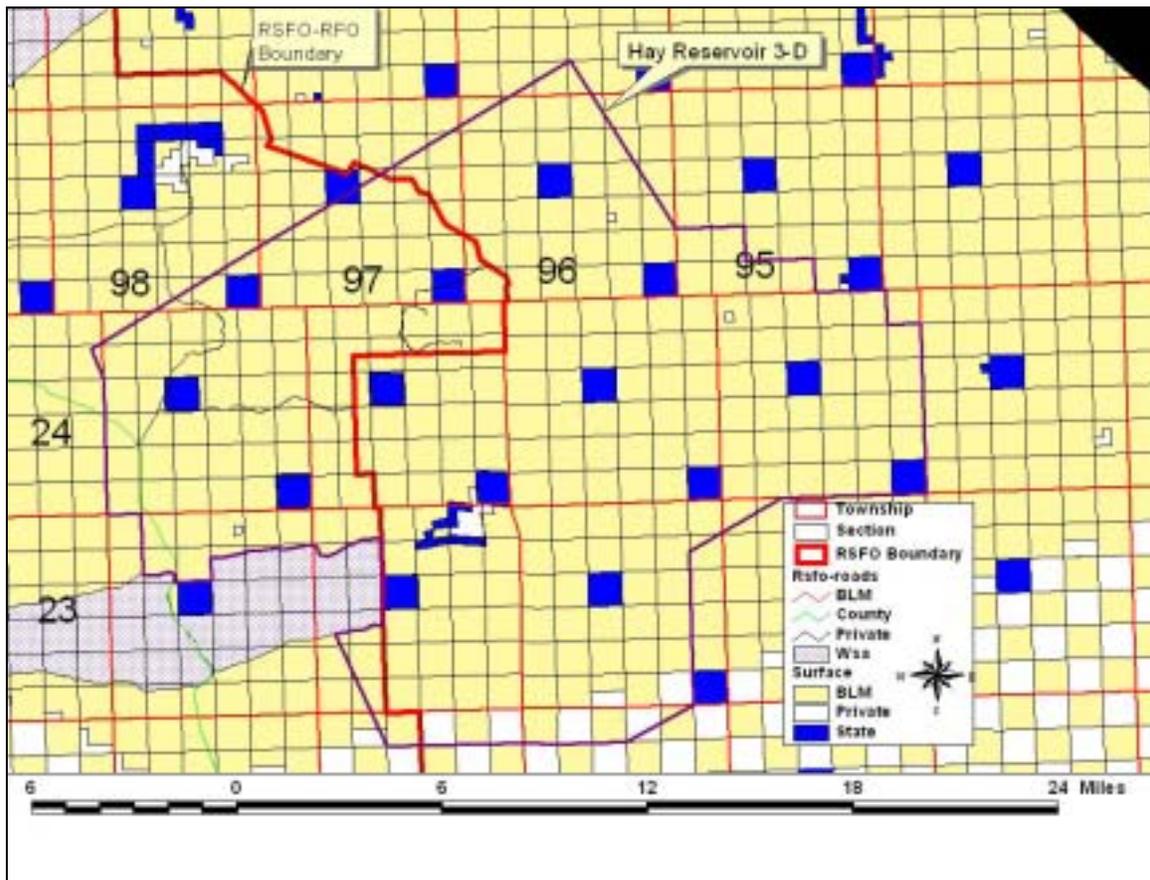
## **2.0 ALTERNATIVES**

### **2.1 Proposed Action**

Map 2 provides a closer view of the project location. The HR3D seismic operation consists of the following components:

**Survey/staking:** During the survey/staking phase, Veritas proposes to utilize a crew of 8-12 surveyors utilizing the global positioning system (GPS) to accurately place pin flags or wooden lath at predetermined points along receiver and source lines. Source points and all travel routes to them would be mapped utilizing GPS. All-terrain vehicles

## Map 2 – Project Map



(ATVs) would be used to carry crew and equipment. The ATVs are one-passenger four-wheelers with 9-inch wide tires. Normally, a single ATV pass would be made along each source and receiver line to accomplish project staking. Several GPS base stations would be required. Should they be needed on BLM-administered land, the base stations would be permitted separately. Surveying and staking may occur without a BLM permit, as surveying and staking are considered under BLM Wyoming policy to be “casual use”.

Sixty-two receiver lines would be aligned northeast/southwest across the project area, spaced 1,540 feet apart. Along these lines, receivers would be pin-flagged every 220 feet. With an estimated 22,57 planned receiver points, the project includes a total of 260 linear miles of receiver line.

Sixty-one source lines would be run in a zigzag pattern aligned generally northeast-southwest across the project area between each pair of receiver lines. Along source lines, source (vibration) points will be stationed every 311 feet if possible. Source points will be positioned in offset positions to avoid rough terrain, existing facilities, or other areas of concern such as wetland areas, sand dunes, and archaeological sites. Normal survey parameters allow an offset of up to 1540 feet. Any change in direction or the drive path along source lines would be marked by orange flagged lath, while source points in line between lath would be marked by numbered pin-flags. All lath would be marked with

reflective tape for improved visibility during nighttime operations. With 22,957 planned source points and necessary access routes, the project includes a total of approximately 1,200 linear miles of proposed off-road vibrator traffic.

**Cable layout:** A helicopter would be used to transport receiver equipment along receiver lines. Bundles of cables, data collectors, batteries, and geophones would be placed along receiver lines, normally at intervals of 6 geophones per station (every 1,320 feet), or closer when necessary. Equipment unpacking and layout, geophone placement and cable connection work, and equipment bundling for helicopter pick-up is accomplished by crews of pedestrian workers, who would alternately layout and pick-up as needed. No truck or buggy vibe traffic is planned along receiver lines. Cable deployment field operations would be performed during daylight hours.

**Vibroseis operations:** Once 8 receiver lines are operational, four buggy vibes working in tandem would be used for input at each source point. Two sets of four buggy vibes may be used to speed up project completion. Each source line will be traversed only once by a set of buggies. As the data collection proceeds across the project, a minimum of 14 live receiver lines would be used, 7 ahead of the energy source and 7 behind.

In working their way through the project area, the vibe-buggies would proceed in a staggered pattern along source lines, with two buggy vibes on each side of the predetermined flagged route. One buggy will not travel in another buggy's tracks unless required to do so in or around cultural sites, or where existing roads permit. At each source point, the units would create an energy source (shake) of 6 sweeps. Buggy vibes would follow GPS travel routes to move from one source point to another and from one swath to another.

The buggy vibes are 12' 6" high, 35' 6" long, and 11' 6" wide. They weigh 62,000 pounds each and are equipped with 43-in (3.6 feet) wide low-pressure tires, which give them a ground pressure of less than 16 PSI. This configuration provides for optimum traction (minimal spinning) while minimizing soil compaction, resulting in reduced potential for two-track roads being formed. A vibrator pad measuring 4.5' x 7.5' is centered under each vehicle. Refueling of buggy vibes would be at existing road and trail crossings. Vibrating activities would be performed 24 hours per day, except in areas of rough terrain.

**Data collection/recording:** During the data acquisition phase of the project, 3D geophysical data would be recorded with specialized equipment including cables, geophones, and one truck-mounted recording unit (the recorder). Veritas would use either an MRX or an RSR recording system. The MRX system involves a continuous cable that connects all receiver stations and receiver lines to each other and to the recording truck where the data is collected.

The RSR recording system utilizes multiple independently operating sets of 6 geophone arrays (one array per receiver station), which are connected to a field data collector box with a battery. The RSR system stores the data within each data collector box, and requires downloading /collection periodically. A field technician accomplishes RSR data down-loading/collection with an approximately 25 lb data collection unit. Collected data

is then transported to the field office for transcribing. The data would have to be collected on each individual receiver line 2-3 times during the recording phase. In both systems, receiver lines would be repaired/troubleshooted as needed via use of ATVs. Typically 1-2 trips may be made along a receiver line for trouble-shooting purposes. Veritas DGC is committed to minimizing ATV trips along each line during the recording phase, with each trip using a different route, to minimize vegetation and surface disturbance.

**Staging areas:** Possibly 2 helicopter staging areas and equipment staging areas would be required. Staging areas provide for temporary storage and maintenance of cables and geophones, trailers, helicopter fuel storage, helicopter landing pad, and parking for crew transport vehicles. A typical staging area is 200 x 200 feet in size. Staging area locations are still unidentified but would be located on previously disturbed areas such as well pads, or where feasible, on State or private land. If a staging area is required on BLM-administered land, it would be permitted separately.

**Public roads:** Operations within county road rights-of-ways would be subject to Sweetwater County Road Department approval and restrictions. Geophone cables would be placed across these roads with warning signs ahead of the cable crossings. Cable would be secured to the travel surface to prevent movement when crossed by traffic. warning signs would be placed along the county roads when vibe-buggy operations are in the vicinity. The vibe-buggies are equipped with flashing amber lights to alert traffic of their presence.

**Clean-up:** The project clean-up phase would proceed concurrently with the recording phase. Pin flags, lath, ribbon flagging and trash would be collected daily, as the recording crew works through the project area. These materials would be deposited at a Wyoming DEQ approved disposal site.

### **2.1.1 Applicant Committed Measures Including BLM Standard Operating Procedures**

#### **Existing Roads and Structures**

1. Any damage to existing roads, water diversion structures, cattle guards, and fences caused by the activities described in the proposed action, would be repaired to the same or better condition as existed before the activities were initiated. To help prevent watershed damage and erosion, cross country vehicular travel across BLM land would not be conducted during periods when the surface soils are wet and saturated. Surveying paint would not be applied to any existing structures or objects (i.e., buildings, fences, signs, rocks, etc.).

#### **Cultural Resources**

1. Impacts to cultural resources would be mitigated by following the procedures specified in 36 CFR 800. A file search and a Class III archaeological inventory would be conducted for the source lines, helicopter staging areas (only if staging

area are to be located on non-disturbed ground or in areas that have not had a Class III cultural inventory), and drive-around routes to the receiver/source lines. Any cultural sites recommended as avoidance areas would be appropriately designated by flagging the entire periphery of the site location or designating a drive-around route.

2. All avoidance areas identified by the archaeological consultant and the BLM would be followed. Maps indicating the drive-around routes would be carried by personnel in the field. If the situation arises where project personnel cannot determine the appropriate drive-around routes, Veritas DGC must request assistance from either the consultant or contact a BLM archaeologist.
3. Any cultural resources discovered during operations would be reported immediately to BLM. Work would be halted in an area large enough to maintain integrity of the site and the site would be evaluated for significance. Evaluation may consist of, but not limited to, avoidance, testing, excavations, mapping, and/or further archival documentation. All evaluation efforts would be developed in cooperation or concurrence with the BLM and SHPO.
4. Buggy-vibe traffic on BLM land would be confined to a single pass within a corridor 100 feet wide (50 feet either side of the flagged centerline) along off-road routes and roads and trails which have been inventoried for cultural resources and which are free of significant or unevaluated cultural resources.

### **Native American Religious Concerns**

1. If any sites of potential Native American concern (e.g., rock art, vision quest structures, herb gathering areas, human burial sites, prehistoric cairns, stone circles, etc.) are identified by Veritas or BLM personnel or subcontractors within the project boundary outside the cultural resource inventory (vibe line) corridors, the Native American Tribes and BLM Rock Springs Field Office Archeologist would be promptly notified.
2. Regardless of surface ownership, all identified sites containing prehistoric cairns or stone circles would be avoided by a distance of 300 feet or more. Regardless of surface ownership, all known sites containing rock art or unusual rock alignments such as altars or medicine wheels would be avoided by a distance of 0.25 miles or more. All Native American burial sites would be avoided by a distance of 1 mile or more. Exceptions to these avoidance distances may be granted by the BLM Authorized Officer, following consultation with Native American Tribal representatives. All decisions about protective or mitigative measures would be made by the Rock Springs Field Manager after completion of consultations with appropriate Native American Tribes (BLM Manual H-8160-1).

## **Paleontology**

1. If paleontological materials are found during the project, all activities within a 100-foot radius of the site would cease immediately, and the BLM's Authorized Officer would be notified to ensure proper handling of the discovery.
2. Mitigation measures for paleontology would require: (a) avoidance of known localities, (b) worker education of the significance of fossil remains and the restriction on collection of paleontologic resources without a permit, and (c) provision for accidental discovery of fossil remains would reduce potential significant impacts.
3. The proponent is responsible for informing all persons associated with this project that they would be subject to prosecution for damaging, altering, excavating or removing any vertebrate fossil objects on site. If vertebrate fossil materials are discovered, the operator is to suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations are not to resume until written authorization to proceed is issued by the Authorized Officer.
4. Within five (5) working days, the Authorized Officer would evaluate the discovery and inform the operator of actions that would be necessary to prevent loss of significant paleontologic resources.
5. The operator is responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer would provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, the operator would be allowed to resume operations.

## **Soils**

1. Soil compaction would be reduced by avoiding the constant use of the same access routes. Highly erodible soils locations, particularly steep slopes, dunal areas, or drainages, should be avoided.
2. Veritas DGC would not conduct any vehicle operations during periods of saturated ground conditions when surface rutting would occur. Surface ruts deeper than 3 inches would be cause for the operations to cease. Veritas DGC's project supervisor or designated representative would be responsible for insuring that damage to soils is avoided or minimized. If it is determined by the BLM Authorized Officer that excessive surface damage has taken place, activities would be suspended until revised or additional terms and conditions are stipulated.
3. Damaged areas would be promptly stabilized by seeding with native plant species and utilizing temporary erosion control devices such as mulch and jute netting if warranted. Specific measures and locations for use would be determined during field investigations by personnel from Veritas DGC and the BLM.

## Surface Water

1. No vibroseis source points are permitted within 300 feet of springs, seeps, or riparian areas (BLM H-3150-1 Handbook).
2. No vehicle traffic is allowed in wetland or riparian areas; traffic must remain on dry ground.
3. Vehicular traffic across/through dry drainage channels is limited to sloping drainage sides or to vertical banks of less than 2 feet. Crossing routes should be aligned perpendicular to the stream channel, to the extent practicable.

## Waste, Hazardous Materials, Safety Issues

1. Veritas would prepare an “Emergency Response and Contingency Plan” addressing spills and fire, and submit it to the BLM Authorized Officer for review at least two week prior to any project field operations.
2. Veritas would place all tanks holding bulk liquids in lined and bermed areas. Capacity of the bermed area would be 110 % of the largest tank. Bulk liquids contained in tanker semi-trailers would be parked in a safe location on the staging area.
3. Veritas would clean up all oil, diesel or hydraulic fuel spills, including removal of all contaminated soils. All spill-related materials must be hauled to a Wyoming DEQ approved disposal site. Spills resulting from ruptured pipelines or well casings would be cleaned up immediately as directed by DEQ and the facility owner/operator.
4. Veritas would coordinate with the nearest paramedic providers to establish Landing Zones across the project. (Contact Casper or Salt Lake for Life Flight, and Rock Springs, Wamsutter or Rawlins for ambulance service.) These zones would be used in case of serious injury to workers needing immediate evacuation.
5. Hazardous materials, other than those identified in Veritas DGC's Plan of Operations, would not be stored for any length of time on BLM administered land. Additionally, no hazardous waste would be disposed of on federal land. The term hazardous material means: 1) any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. 9601 et seq., and the regulations issued under CERCLA, 2) any hazardous waste as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, and 3) any nuclear or nuclear byproduct as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq.

6. Veritas DGC would be responsible for clean up of any diesel or hydraulic fluid spills, including contaminated soils. All spill-related material would be hauled to a Wyoming Department of Environmental Quality (DEQ) approved disposal site.

### **Wilderness**

1. The Sand Dunes WSA would not be driven over or impacted. There would not be any activity within the WSA. The road which defines the WSA would be used for access but no geophones would be placed within it.

### **Geology/Fluid Minerals**

1. Vibroseis source points would be located a minimum of 300 feet from all oil and gas wells and standing structures, unless written permission to encroach closer has been given by the owner/operator (BLM H-3150-1 Handbook).

### **Livestock / Range**

1. Veritas would make every effort to avoid disturbing or altering fences. Gates would be used when possible. Gates must be closed immediately after passing through them. If a fence must be crossed, it would be let down, crossed, and immediately put back up. The wires would be stretched to the original tension from the nearest brace or gate panel. If the fence is to be cut, a brace panel would be constructed on either side of the cut before the cut is made. The cut would be repaired with wire of the same type wire with no new gates established.
2. Vibroseis source points would be located a minimum of 300 feet from all water wells and reservoirs (BLM H-3150-1 Handbook Illustration 10, p.1).
3. Any and all facilities damaged, destroyed or removed in connection with this geophysical exploration operation would be immediately restored to original condition or replaced with a similar facility or equal or better condition.

### **Vegetation**

1. Disturbance of vegetation would be kept to a minimum by limiting the number of times the vehicles travel over their designated routes. Steep slopes, dunal areas, or ephemeral drainage areas would be avoided where possible. If required, damaged areas would be seeded with native plant species recommended by the BLM Authorized Officer.

### **Noxious / Invasive Plants**

1. To prevent the introduction of new weeds, Veritas would thoroughly power-wash all field vehicles (buggy vibes, pick-ups, ATVs, etc) before transporting them to the project area.

2. Veritas would reclaim and reseed, according to BLM standard seed mix, any areas where their operations have caused surface rutting or have otherwise removed surface vegetation, as directed by the Authorized Officer.

### **Wild Horses**

1. Veritas would avoid aerial operations during the peak foaling period of April 1 to July 15.

### **Recreation**

1. To prevent resource damage, Off Road Vehicles (ORV)/All Terrain Vehicle (ATV) is limited to:
  - Project-related necessary tasks; recreational use is not permitted.
  - The single pass (no overlapping tire tracks) of ATVs (four-wheelers) (in conformance with BLM Manual 3150, part 3.1.B.5)
  - Slopes less than 25 % (15 degrees).
  - Dry ground surfaces so that rutting in excess of three inches would not occur.

### **Wildlife/Special Status Species**

1. No activity is allowed 0.75 mile (1.0 mile for ferruginous hawks and eagles) of an active raptor nest during the mating/nesting season (March 1 through July 31) unless approved by BLM<sup>1</sup>.
2. No activity is allowed within greater sage-grouse nesting habitat (suitable habitat within 2.0 mile of an active lek) during the breeding and nesting season of March 1 - June 30, or on important wintering areas as determined by BLM.
3. If a black-footed ferret or its sign is found, all action potentially affecting the colony or complex would cease, and any further action would be subject to United States Fish and Wildlife Service guidance and/or restrictions.
4. March 1 through June 30, no project-related vehicles are permitted off-road within a two-mile radius of active greater sage grouse leks. Written exception to this stipulation may be granted by the BLM Authorized Officer.

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<sup>1</sup> *Due to limits on the available time of qualified personnel, the unpredictability of wildlife, and future weather conditions, requests for exceptions to impending wildlife stipulations will only be considered in the event of extraordinary and unavoidable occurrences over which the company has little or no control. Additionally, projects must be initiated in a time frame which would allow for completion of the project prior to the beginning date of wildlife protection stipulations.*

## **Project Cleanup**

1. As directed by the Authorized Officer, Veritas DGC would be responsible to clean up the lines used for the geophysical operations on public lands managed by BLM. All trash, flagging, lath, etc. would be removed and disposed of in an authorized location.
2. No open burning of garbage or refuse is allowed in association with seismic activities.

## **Compliance**

1. Operations can be suspended during any portion of the project when in the judgment of the BLM Authorized Officer, Veritas DGC or any contractor hired by Veritas DGC have not complied with any terms or conditions described in the approved NOI and attached Special Terms and Conditions.

### **2.2 No Action Alternative**

Under the No Action alternative, the vibroseis project would not be authorized on BLM administered lands. Operations could still occur on state and private lands. Existing land activities within the project area would continue generally as is. Additional wells could be drilled based on existing data. Selection of this alternative would not prevent Veritas or another geophysical operator from proposing other seismic operations.

### **2.3 Alternatives Considered but Eliminated from Detail Study**

**Man-Portable Drilling:** Under this alternative, only man-portable drilling equipment transported by crews on foot would be used to drill shot-holes for the subsequent deployment of explosive charges as the sole energy source. Drill cuttings would be used to plug dry holes. Bentonite would be used in any holes drilled into water bearing zones. The holes would be plugged in compliance with Wyoming Oil & Gas Conservation Commission Rules and Regulations Chapter 4, Section 6, Paragraph P. Cap wires would be buried until the explosives are detonated. After detonation, the cap wires would be cut off below ground levels. Cable placement and other facets of the project would be the same as Alternative 1. This alternative was eliminated because it is not technically nor physically feasible to man-drill 60-foot deep holes. In addition, the timeline to conduct this proposal using such means would result in a project that would not be economically feasible.

**Heliportable Drilling:** One helicopter is capable of supporting 4 drills. Utilizing 1 helicopter with 4 drills the drilling phase would take approximately 33 months, with no weather days or other down-time. Two helicopters in support of 8 drills, which would be the maximum number preferred for operational reasons, would reduce this drilling time to about 16.5 months. If seasonal restrictions (such as for greater-sage grouse strutting and nesting) were applied, the period of drilling operations would be extended even further. The cost of the project under this alternative is estimated to over four times the

cost of vibroseis operations as proposed, making this alternative economically not feasible.

**Poulter Shot:** Is a method where 5 pound charges are placed above ground on common wooden lath. Six charges are detonated at once using detonator cord. Some of the energy from the explosion enters the ground creating a seismic wave. This method is very inefficient and returns poor data and would not meet the purpose and need of the proposed action.

### 3.0 AFFECTED ENVIRONMENT

The following critical and other resource elements of the human environment have been considered. Those that have been checked "No" are not potentially affected or impacted by this proposed action and will not be discussed further in this document.

#### Critical Elements:

Critical Element	Yes	No	Critical Element	Yes	No	Critical Element	Yes	No
ACEC		X	Wastes, Hazardous, Solid		X	Native American Religious Concerns	X	
Air Quality		X	T/E Species	X		Floodplains		X
Cultural/Historic	X		Water Quality		X	Environmental Justice		X
Farmland, Prime/Unique		X	Wetlands/Riparian Areas		X	Wild & Scenic Rivers		X
Wilderness	X		Invasive Species	X				

#### Other Resource Elements:

Resource Element	Yes	No	Resource Element	Yes	No	Resource Element	Yes	No
Forested Area/Products		X	Fluid or Solid Minerals	X		Special Status Species - Vegetation	X	
Geology		X	Land Resources		X	Wildlife	X	
Livestock Grazing		X	Rangeland	X		Special Status Species - Animal	X	
Paleontology	X		Vegetation	X		Socio/Economics	X	
Wild Horses	X		Soils	X		Recreation		X
Visual Resource Management	X							

### **3.1 Cultural/Historical Resources**

Previous work in the project area shows that the area contains moderate to high densities of prehistoric sites spanning at least the last 6,000 years. The area has been used prehistorically by hunting and gathering bands possessing a highly mobile settlement pattern. The area contains scattered campsites throughout, though some areas, especially near springs and water sources appear to have been occupied many times over. Remains of campsites and resource collection/processing areas are expected. Sites such as 48SW5057 (The Buffalo Hump Site) evidence long-term, extensive occupation of places within the HR3D project area.

Stock herding camps have been recorded on prominent hills and ridges. Corrals, water improvements, herder campsites, and roads relating to historic grazing practices occur throughout the area.

In recent times, the land use pattern expanded to include minerals exploration and extraction. The area contains mining markers, roads, pipelines, and gas wells related to this expanded land use.

### **3.2 Native American Religious Concerns**

The HR3D area contains known features and locations of religious concerns to Native American Tribes. Sites used in traditional cultural ceremonies are present and remain in use to this day. The nature and location of these resources are kept confidential in order to protect the resources per Bureau consultations with Native American Tribes. Additional manifestations of the kinds of sites which are important to Native American religious practitioners are likely to occur with the HR3D project area.

### **3.3 Noxious/Invasive Species**

The State of Wyoming has designated 22 weed species as being "noxious"; however, not all occur in Sweetwater County. Noxious weeds likely to be found in the HR3D project area include quackgrass, common burdock, Russian knapweed, Canada thistle, musk thistle, and field bindweed. Occurrence of these weed species has a much higher probability in areas of past disturbance and varies according to basic vegetative cover type.

### **3.4 Threatened, Endangered, Proposed, Candidate Species**

Five federally designated threatened, endangered, proposed, or candidate animal species are considered potentially present in the project area (USFWS letter of May 30, 2002). Status of all potentially affected federally designated species with regard to the project are summarized below.

Species	Status	Habitat	Status in Project Area/Comments
Bald eagle	T	Found statewide	No suitable nesting/roosting habitat. No effect determination.
Black-footed ferret	E	Prairie dog towns	None known. Applicant committed to avoiding active prairie dog burrows. No effect determination.
Ute Ladies' tresses	T	Perennial streams with riparian habitat	No Perennial streams, wetlands or Riparian habitat. No effect determination.
Blowout Penstemon	E	Sand dune areas	Surveyed Spring 2001 – No plants within project area. No effect determination.
Platte River Species	E	Downstream riverine habitat of the Platte River in Nebraska	Project located in the Great Divide Basin that is hydrologically-closed. No effect determination.

T - threatened      E - endangered      P – proposed for listing

No sightings of bald eagles have been documented in or adjacent to the project area. Bald eagles prefer habitat near water and cliffs or large trees for nesting. No such habitat exists in the area. The BLM has made a “no effect” determination. This species will not be given further consideration in this analysis.

Black-footed ferrets have the potential to exist in the general area. The project area contains white-tailed prairie dog towns which meet the density requirements to provide habitat for the black-footed ferret. The HR3D area was aerially inspected for prairie dog colonies in May 2002, with colony locations GPS point-plotted. These maps are on file at the Rock Springs and Rawlins Field Offices. Black-footed ferret surveys conducted for the Lower Bush Creek Coal Bed Methane Exploratory Pilot Project (which partially overlaps this project area) did not find any evidence of ferrets in the area.

Although the USFWS determined the area or portions thereof meet ferret habitat criteria and has recommended BLM require ferret searches in affected prairie dog colonies meeting ferret habitat criteria for other actions, the USFWS has modified their position for 3D seismic projects using vibroseis. In a letter to the RFO for another seismic project dated August 8, 2003, the USFWS stated:

“Based on the best available data, the Service believes that thumping [vibroseis] activities within an active prairie dog town will not adversely affect black-footed ferrets (*Mustela nigripes*)... Until further research indicates differently, we recommend that thumping energy source points avoid prairie dog burrow entrances and that explosive seismic surveys avoid prairie dog towns...”

The BLM concurs that it is not necessary to conduct black-footed ferret surveys for seismic projects to using vibroseis nor would this action preclude the area for consideration for possible ferret introduction in the future. Due to these factors, the BLM has made a “no effect” determination. This species will not be given further consideration in this analysis.

Two federally listed plant species were identified by the U.S. Fish and Wildlife Service as potentially present in the general area (USFWS letter of 5/30/2002). Ute Ladies' tresses (threatened) occurs in seasonally moist soils and wet meadow drainages below 7000 feet elevation. Blowout penstemon (endangered) has been documented along the Killpecker Sand Dunes near Rawlins. Neither of these species has been found within the HR3D project area. Thus, the BLM has made a "no effect" determination. These species will not be given further consideration in this analysis.

The project area is located entirely within the Great Divide Basin, a hydrologically-closed basin. Activities occurring in this basin do not have an affect the Platte River or endangered species associated with it. BLM has made a "no effect" determination. These species will not be considered further in this document.

### **3.6 Water Resources**

The HR3D is located entirely within the Great Divide Basin, a hydrologically-closed basin; the Green River and Platte River drainages would not be affected by water depletions or other activities. Named drainages within the HR3D project include Bear Creek, Bush Creek, and Red Creek. All stream channels in the project area exhibit ephemeral flow during snowmelt and high-intensity, short-duration storms. No perennial streams lie within the project boundary.

Other water resources present include Bush Lake and several small unnamed natural ponds. Seasonally dry lakebeds are also found in the project area and consist of 3 unnamed sizeable playas and a portion of Red Lake. Three springs, Finch McKinney Spring, Mud Springs, and Osborne Spring are known in the area. Potential exists for other undocumented springs and seeps. Stockwater wells and associated pipelines are addressed in the Livestock/Range section of this EA.

### **3.7 Noise, Hazardous Waste, Safety Issues**

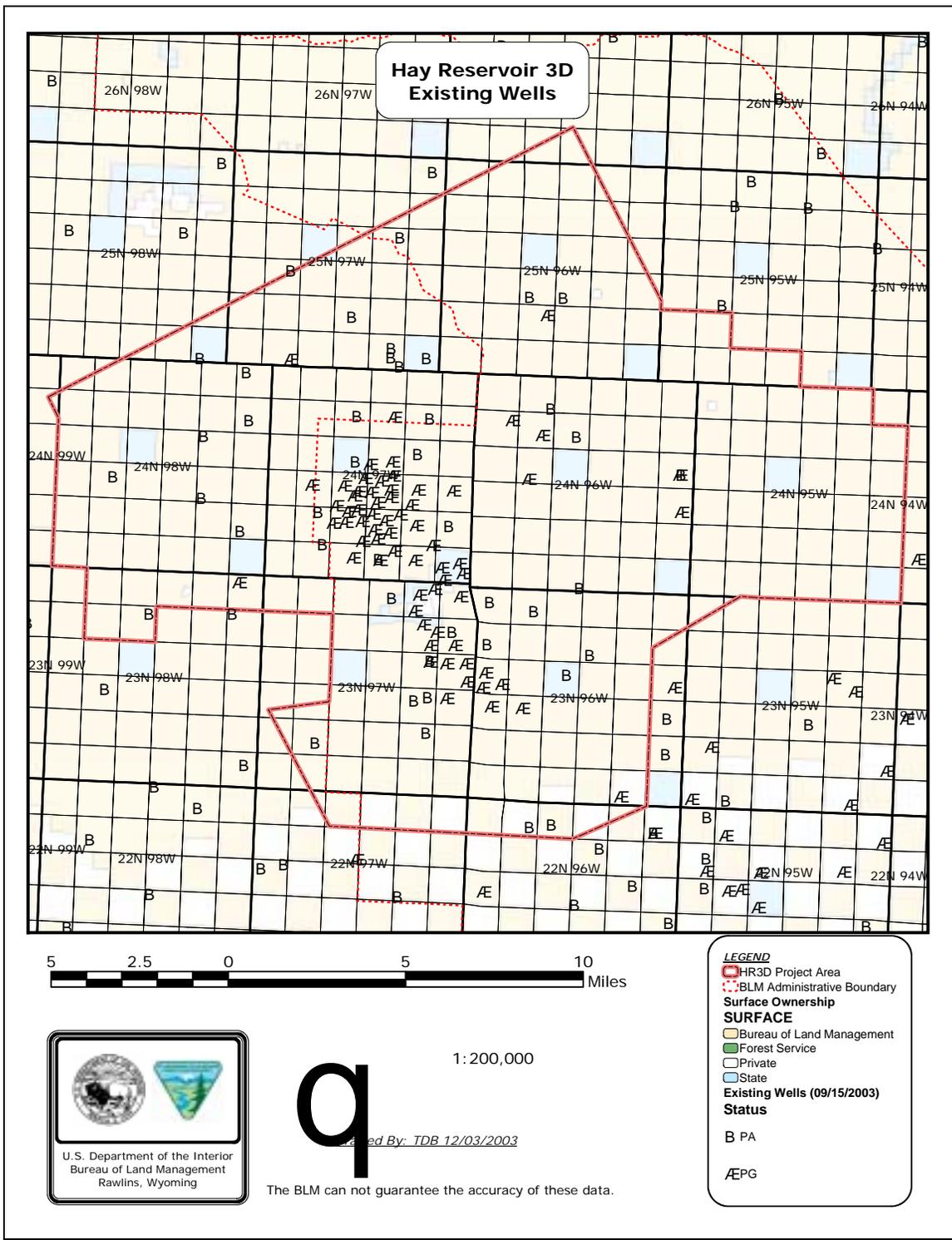
The project area falls within an area of on-going oil and gas related activity. No known hazardous waste sites occur.

### **3.8 Fluid Minerals**

The proposed HR3D project lies within the Great Divide Basin, a closed geologic basin formed of sedimentary deposits.

Oil and gas exploration and production is an on-going activity within the project area. Records indicate that 71 producing gas wells (Map 3) lie within the project boundary, along with associated access roads, pipelines, and other related facilities.

# MAP 3 – Producing Wells



### **3.9 Paleontological Resources**

The Wasatch and Green River Formations (Tertiary) are exposed in the project area. Both of these geologic formations have high potential for fossils of scientific interest. The project area, therefore is subject to BLM Paleontologic Resource Condition 1 (H-8270- General Guidance for Paleontological Resource Management). Condition 1 lands trigger analysis of existing data prior to authorizing land-use actions involving surface disturbance.

### **3.10 Recreation**

Known levels of recreation activity within the project area and adjacent lands are low, focused predominantly on the fall hunting seasons. Some hiking, photography, and other recreational activities may take place within the Red Lake WSA (see Map 2, Project Map).

### **3.11 Sensitive Species**

A number of animal species potentially present in the project area have been accorded “sensitive species” status (IM WY-2001-040). Sensitive species potentially present in the HR3D include: mountain plovers, raptors, white-tailed prairie dog, Wyoming pocket gopher, pygmy rabbit, swift fox, raptors, greater sage grouse, sage thrasher, loggerhead shrike, brewer’s sparrow, sage sparrow, northern leopard frog, Great Basin spadefoot, and boreal toad.

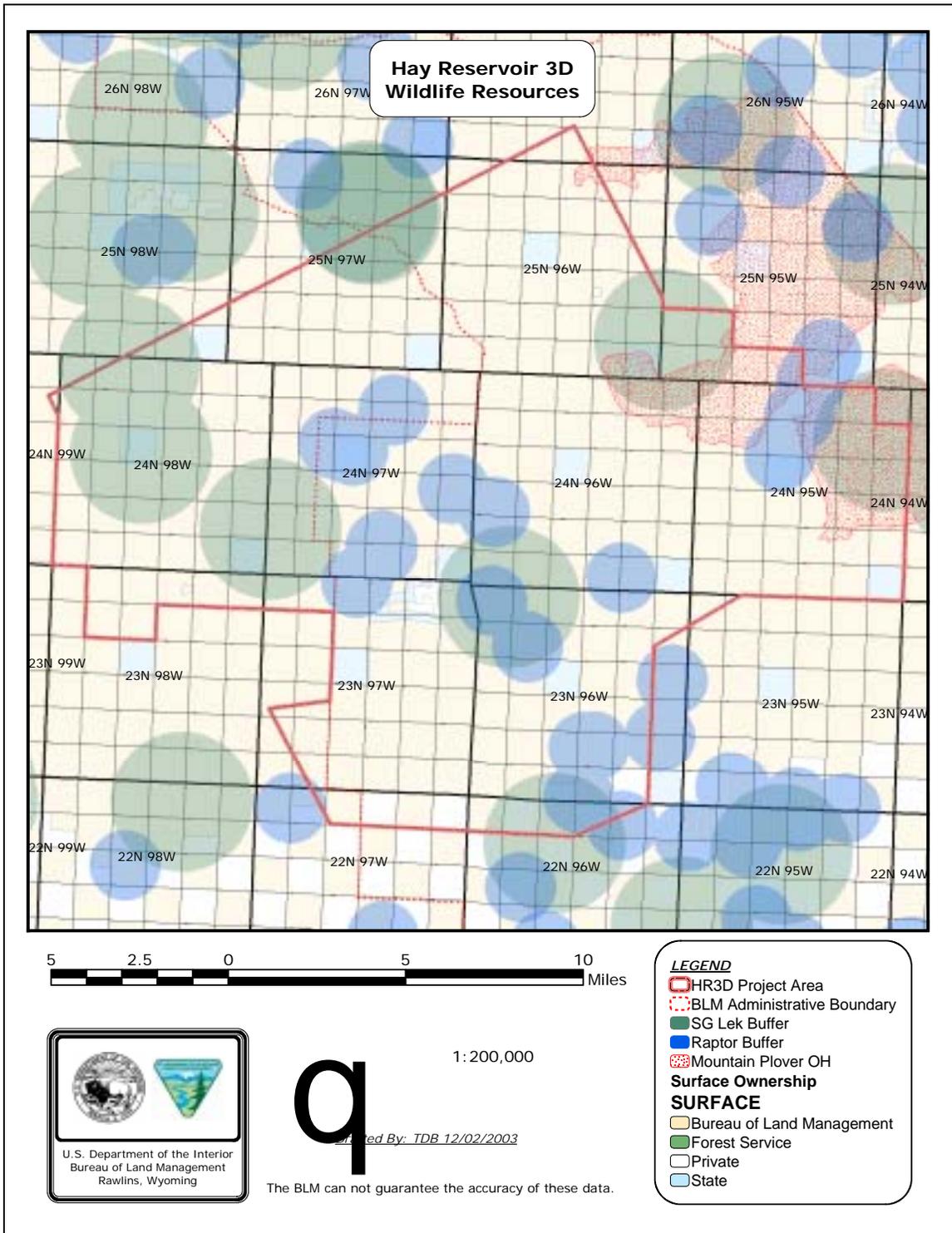
Mountain plovers were classified as a species proposed for listing but has been dropped from further consideration by U.S. Fish and Wildlife Service. BLM considers this species as sensitive and protective measures continue to apply to actions. Much of the project area has potential habitat for mountain plover, which is often associated with prairie dog towns. The species is known to breed and rear young within the project area.

Raptors including burrowing owl, ferruginous hawk, and golden eagle are known to nest in the area. Data shows that 20 potential nest sites within or adjacent to the project area (Map 4).

BLM records show that there are 8 greater-sage grouse leks and/or nesting habitat within or adjacent to the project area (Map 4).

Potential habitat for five sensitive plant species occurs within the project boundary. These plants include Cedar Rim thistle, Wyoming tansy mustard, large-fruited bladderpod, Beaver Rim phlox, and Nelson’s milkvetch. Nelson’s milkvetch has been found within the boundary area.

# MAP 4 – Wildlife Data



### **3.12 Socio-Economic Considerations**

The HR3D project is located in Sweetwater County, Wyoming. The local economy is highly dependent on energy gas exploration and development.

### **3.13 Soils**

Soils within the project area vary from clay playas to sandy loam soils on the upland benches interspersed with rock outcrops and intermittent or ephemeral drainages.

### **3.14 Vegetation**

Vegetation in the project area is typical of the semi-arid Wyoming Basin floristic region, where precipitation and soil parent material are controlling factors for plant composition. Vegetation may be sparse in areas. Most of the project area is vegetated with a mix of types typical of the basins of south-central Wyoming and are dominated by plant species that are drought tolerant. Plants common in the project area include Wyoming big sagebrush, rabbitbrush, broom snakeweed, greasewood, shadscale, Gardner's saltbush, bitterbrush, Indian ricegrass, wheatgrasses, prairie junegrass, wild buckwheats, and lichens.

### **3.15 Visual Resources**

The majority of the project area is rolling sagebrush steppe, generally free of major rock outcrops or abrupt breaks in slope. However, a mile-wide band of stabilized sand dunes occurs in the central project area and a mosaic of more rugged terrain is present overall, characterized by the erosion features of Horseshoe Bend, Luman Rim, and Buffalo Hump. Although natural scenes dominate the overall area, human intrusions include natural gas wells, bladed and two-track roads, water impoundments, and fences.

Nearly all lands within the HR3D have been classified as VRM Class III. Under this classification, changes in basic elements are permitted. Any changes should remain subordinate to the visual strength of the existing character and actions must be designed to partially retain the existing character of the landscape'.

Class II VRM area is located 1-mile outside the boundary of the Lake WSA. The objective for Class II areas is to design proposed activities so as to retain the existing character of the landscape. Management activities may be seen, but should not attract attention of the casual observer, and must be designed to blend into and retain the existing character of the natural landscape.

### **3.16 Livestock/Range**

The proposed HR3D project falls in the RSFO-Red Desert and the RFO-Cyclone Rim allotments. Utilized by cattle and sheep, grazing is scheduled in these allotments in all four seasons. Improvements associated with these BLM-administered allotments include water wells and associated pipelines, stock water ponds, and fences.

### **3.17 Wild Horses**

The HR3D project area is contained within the Great Divide Basin Wild Horse Herd Management Area. The appropriate management level (AML) for this herd management area is 415-600 horses. On-going gathering operations, per agreement with the State of Wyoming, are designed to reduce the population of wild horses to AML.

### **3.18 Wildlife**

The project area provides winter/yearlong habitat for mule deer, pronghorn antelope, and elk. No big game crucial winter range or parturition areas have been identified within the project area. A variety of neo-tropical bird species, jackrabbit, cottontail rabbit, coyote, Richardson ground squirrel, thirteen-lined ground squirrel, badger, and mice also occur within the project area.

Areas of tall (>4 feet) sagebrush along drainages serve as wildlife corridors, providing hiding cover from predators as well as thermal shelter for wintering wildlife. Stands of tall sagebrush occur in several areas within the HR3D.

## **4.0 ENVIRONMENTAL CONSEQUENCES**

This section of the analysis provides the analysis of the potential impacts that could result from implementation of the proposed action as well as the potential consequences of selecting the no action.

Measures proposed by the applicant which include BLM's standard operating procedures would eliminate or reduce impacts. The analysis takes these measures into account. Additional measures could be identified based on the analysis and would be designed to further reduce or eliminate unnecessary or undue impacts.

This analysis addresses the direct and indirect effects as a result of implementing the alternatives. This analysis tiers to the general cumulative impact assessment of the Continental Divide/Wamsutter II Natural Gas Project EIS (1999, Figure 4.1) which recognized on-going and future oil and gas exploration and development in the area of the proposed action. Potential direct and indirect impacts are addressed by resource value for each alternative. The area of analysis for cumulative land-based effects does not extend beyond the project area since seismic activity is of short duration in any given area within the project area. Cumulative impacts are addressed in Section 5.0.

### **4.1 Cultural/Historical Resources**

#### **4.1.1 Proposed Action**

The proposed seismic exploration has the potential to cause effects to sites eligible for the NRHP. An effect is defined as an alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Places (36 CFR 800.16(i) and (l)). These effects could be in the form of direct, indirect or

cumulative impacts. Direct impacts are physical, and could occur from vehicle traffic. Indirect effects to sites could occur through creation of trails which subsequently might be used by recreationists and/or stimulate erosion. Cumulative effects would consist of a gradual degradation of the cultural landscape through erosion and illicit artifact collection. With the implementation of the spread out vehicle pattern, prohibiting operations when the soil is saturated, and the standard cultural resource procedures prescribed under the proposed action (pursuant to the Wyoming BLM-SHPO State Protocol regarding implementation of the NHPA Sec. 106 and to BLM 8100 series manuals) potential impacts would be minimized.

#### **4.1.2 No Action Alternative**

There would be no affect to cultural/historical resources under the No Action alternative.

### **4.2 Noxious/Invasive Plants**

#### **4.2.1 Proposed Action**

Noxious weeds could be introduced to the area by infested equipment. With implementation of the vehicle washing as proposed, no adverse impact with regard to weeds is foreseen.

Weeds could also invade and take hold in areas of surface disturbance caused by project operations. Provided reclamation and reseeding is undertaken promptly in any areas of (unanticipated) surface disturbance as prescribed under the proposed action, no adverse impact to vegetation or weed occurrence is foreseen.

#### **4.2.2 No Action Alternative**

There would be no affect from noxious/invasive plants under the No Action alternative. However, this does not mean that the potential for invasive noxious/invasive plants to become established would not occur. There remains a possibility other, on-going activities could result in infestations of weeds.

### **4.3 Native American Religious Concern**

#### **4.3.1 Proposed Action**

Sites of Native American religious concern could be adversely affected if the physical integrity of the site were compromised by seismic operations or by generally interfering with their ceremonial use during seismic operations. Implementation of the proposed protective measures would minimize these potential impacts.

#### **4.3.2 No Action Alternative**

There would be no affect to the Native American religious concerns under the No Action alternative.

## **4.4 Water Resources**

### **4.4.1 Proposed Action**

Seismic operations near any springs, seeps or riparian areas in the project area could disrupt the subsurface structure or stream channel morphology, thus altering water flow. If safe operating distances are observed as proposed, no adverse impacts would be expected.

Vehicular traffic through riparian or wetland areas could result in a temporary increase in turbidity (water quality deterioration). If these areas are avoided as proposed, actual impacts would be negligible.

Vehicular traffic through the (ephemeral) stream channels could break down banks, increase sediment load, cause or accelerate erosion, and destabilize the channel. Application of the channel crossing protective measure and reclamation/re-seeding where necessary as proposed, no appreciable impact is foreseen.

### **4.4.2 No Action Alternative**

There would be no affects to the water resources under the No Action alternative.

## **4.5 Noise, Hazardous Waste, Safety Issues**

### **4.5.1 Proposed Action**

Seismic-related activities, including buggy vibrate engine noise, the sound of vibration at source points, and support traffic would create sound disturbance within the immediate area of operations of 90-112 decibels (dBA). These impacts would be transient as the project operations proceed across the project area but would occur for the duration of the project. Because of the remote location of the proposed activity, perception of the added noise would be primarily by wildlife and livestock, as human presence in the project and surrounding area is at very low levels (project and oil field employees notwithstanding). No occupied dwellings exist within or near the project area. Noise-related effects, consisting of temporary wildlife displacement and annoyance of any human recreationists present are expected to be minor and of short duration.

Project markers in the form of wooden lath, ribbon flagging, pin-flags and spray paint could contribute litter in the project area. Veritas proposes to remove all lath, ribbon flagging, pin-flag, and all waste from the area. Spray paint would not be applied to vegetation or to the ground. No debris should remain once the project is complete.

Hazardous substances such as gasoline, diesel, vehicle lubricant and hydraulic oil used in the field during project operations could contaminate the immediate area, if spilled. With implementation of the proposed waste handling measures, no adverse impact is foreseen.

The seismic crews would be instructed on procedures in case a wildfire is started. Phone numbers for reporting fires would be posted in all of the vehicles used on the job.

#### **4.5.2 No Action Alternative**

There would be no affect under the No Action alternative.

#### **4.6 Wilderness**

##### **4.6.1 Proposed Action**

Since no project activity is proposed within the Red Lake WSA, direct effects would not occur. Indirect effects to the WSA would primarily be in the form of seeing and/or hearing project vehicles during operations in the vicinity of the WSA. It is estimated that operations within viewshed and/or earshot of the WSA would last less than 2 weeks, and that the visual and audible intrusions during that period would be low. Anticipated impacts to wilderness values are not expected.

##### **4.6.2 No Action Alternative**

There would be no affect under the No Action alternative.

#### **4.7 Fluid Minerals**

##### **4.7.1 Proposed Action**

Adoption of the proposed action would allow project participants to obtain and utilize 3D geophysical data, resulting in the greater likelihood of drilling producing wells and planning for efficient field development.

Vibroseis operations near existing gas wells or related facilities could result in damage. Proposed distance measures would be sufficient to protect these structures, any impact would be minimal. In the event of unanticipated damage to any existing facilities, the proponent would restore the facility to original condition or replace it with a similar facility.

##### **4.7.2 No Action Alternative**

Adoption of the no action alternative is likely to result in the drilling of more wildcat wells and 'dry holes' than would be drilled following completion of the proposed geophysical project. Drilling dry holes causes unnecessary and undue impacts to surface resources and is expensive for the lessee.

#### **4.8 Livestock/Range**

##### **4.8.1 Proposed Action**

Seismic operations in close proximity to water wells and pipelines or water impoundments could result in casing failure or dam fissure and a subsequent loss of livestock water. However, distance measures proposed would protect these facilities and

any impact would be minimal. If damage were to occur due to seismic operations, Veritas would be responsible for fixing or replacing the facility.

The proposed action could result in short-term vegetative effects on approximately 3 % of the project area. This disturbance would consist primarily of conversion of some mature shrubs and forbs in the tire paths to grass and also to younger, more vigorous shrubs and forbs. Existing grass plants should not be affected, particularly if operations were to occur during snow cover. Plants in the tire paths would change in appearance however palatable livestock forage would not be affected. With side-by-side vehicle travel paths livestock forage impacts are anticipated to be negligible.

#### **4.8.2 No Action Alternative**

There would be no affect to the livestock grazing under the No Action alternative.

### **4.9 Paleontological Resources**

#### **4.9.1 Proposed Action**

Fossils of scientific interest exposed at the surface could be damaged or destroyed, unless certain precautions are taken. Vibroseis projects, when standard slope restrictions and the spread-out vehicle traffic pattern are followed, lessen the potential impact to paleontological materials. The standard BLM paleontological material discovery stipulation would also apply. With implementation of the standard slope restrictions (see mitigation measures for soils) and the discovery measure prescribed in mitigations, no adverse impact to paleontological resources is foreseen.

#### **4.9.2 No Action Alternative**

There would be no affect to the paleontological resources under the No Action alternative.

### **4.10 Recreation**

#### **4.10.1 Proposed Action**

Any persons recreating in the area could be inconvenienced by project operations. Project activities could temporarily displace game inconveniencing hunters in the immediate area should operations overlap with the hunting season. No impacts to recreationists are expected once the project is completed.

#### **4.10.2 No Action Alternative**

There would be no affect to the recreation under the No Action alternative.

## **4.11 Sensitive Species**

### **4.11.1 Proposed Action**

Noise and vibrations caused by the proposed vibroseis operations could cause prairie dogs and other underground-dwellers to temporarily flee to their burrows while equipment is in close proximity. Burrows would be avoided during operations and damage (i.e., burrow failure) is not expected. Data suggest that within approximately 6 months of completion of a 3D vibroseis project, disturbance associated with geophysical activity appears to have had positive effects on new burrow construction, as loosened soil along vehicle travel paths is attractive to some burrowing rodents (Thomas 1995). No adverse effects to burrowing mammals are expected.

Geophysical operations would occur outside of critical time frames for certain species such as the mountain plover, greater-sage grouse, and raptors; species which are documented as occurring in the area. With timing and avoidance limitations, no impacts to these species are expected. Individuals of other sensitive species (i.e., swift fox) could be impacted by geophysical operations (e.g., temporary displacement); however, populations of the species would not be impacted. Application of timing limitations or avoidance measures for mountain plover, raptors, and grouse would benefit other sensitive species.

### **4.11.2 No Action Alternative**

There would be no affect to special status species under the No Action alternative. Any exploratory drilling would be subject to NEPA compliance and sensitive species would be analyzed at that time.

## **4.12 Socio-Economic Considerations**

### **4.12.1 Proposed Action**

Seismic crews would likely be headquartered in Rock Springs, Wyoming. Crews would be transported to the project area and back to Rock Springs on a daily basis. Most of the workers have permanent residences elsewhere, consequently the project is not expected to place any demands on schools or similar facilities.

It is unlikely that project activities would generate high levels of concern, opposition, or dissatisfaction among local residents. Local communities are unlikely to view this project as problematic, particularly since the project overlies existing gas field.

The project would provide some immediate monetary inflow to the local economy in terms of room and board, fuel, and other incidental purchases. Possible indirect economic benefits could result if geophysical data proves economically feasible hydrocarbons occur in the area and any subsequent drilling is successful. Any future development proposed as a result of this action would be subject to the appropriate level of environmental analysis.

#### **4.12.2 No Action Alternative**

There would be an adverse effect to the socio-economic condition under the No Action alternative in the form of lost opportunity for short-term economic gain for those local businesses that provide services to geophysical crews. This alternative would result in a loss of data that could lead to further energy development and production. Geophysical activity is considered a valuable method for collecting subsurface data and allows for efficient planning of subsequent activities.

#### **4.13 Soils**

##### **4.13.1 Proposed Action**

Impacts to soils in the form of compaction and gully erosion could be created, principally by the proposed buggy traffic. Vehicle tire impacts could occur on no more than 3 % of the total surface area encompassed by the project. Compaction reduces capacity for soils to absorb moisture, and results in reduced root growth and plant vigor. Off-road vehicles would crush, and to a lesser extent break off, above-ground vegetation located within the tire tracks and pads; however, root masses of grass and forbs would remain alive and intact, and continue to hold soil in place reducing or avoiding erosion. By off-setting individual vehicle drive paths, soil compaction and potential erosion, as well as vegetation damage would be minimized.

Should geophysical operations occur when the ground is frozen, or if of snow cover is present, compaction and soil erosion would be negligible.

##### **4.13.2 No Action Alternative**

There would be no effect to the soil under the No Action alternative.

#### **4.14 Vegetation**

##### **4.14.1 Proposed Action**

As is typical of 3D vibroseis projects, the proposed action would result in direct (tire) impacts to approximately 3 % of the land surface within the overall project boundary. Previous 3D geophysical projects typically leave little or no visible trace, killing less than 5 % of the brush which is driven upon. Where woody brush plants are killed by vehicular traffic, similar past project indicate that the grasses remain. Within a short time younger and more vigorous forbs and shrubs begin to reoccupy the travel paths. For sagebrush plants to reestablish to the currently existing size and cover could take 30 years. Tall sagebrush would be avoided. The proposed action is anticipated to cause minimal impacts to vegetation and these impacts are considered necessary and due.

##### **4.14.2 No Action Alternative**

There would be no adverse affect to the vegetation under the No Action alternative.

## **4.15 Visual Resources**

### **4.15.1 Proposed Action**

To avoid obtrusions, reduce soil compaction, and reduce the degree of vegetation loss, BLM Wyoming has required geophysical operators to off-set their vehicles such that the tires of one vehicle do not follow in the path of another. This approach has been successful and long linear two-tracks are not created. With vehicle off-setting, visual impacts are anticipated to be extremely low level and short term, leaving virtually no “footprint”.

### **4.15.2 No Action Alternative**

There would be no effect to the visual resources.

## **4.16 Wild Horses**

### **4.16.1 Proposed Action**

Wild horses, especially young foals and pregnant mares, could react to low flying helicopter operations. Operations would avoid the peak foaling season between April 1 and July 15. Otherwise, wild horses are generally very tolerant of human activity and only short-term and local displacement is anticipated.

### **4.16.2 No Action Alternative**

No adverse effects are anticipated.

## **4.17 Wildlife**

### **4.17.1 Proposed Action**

Geophysical activities will not take place during critical wildlife periods. Geophone cable deployment and vehicle traffic would cause animals to temporarily vacate the immediate area where operations are occurring. Such displacement would be brief and localized.

### **4.17.2 No Action Alternative**

There would be no effect to wildlife under this alternative.

## **4.18 Mitigation Measures**

No mitigation beyond that identified under the proposed action has been identified.

## **5.0 CUMULATIVE AND RESIDUAL EFFECTS**

### **5.1 Proposed Action**

The BLM must consider the cumulative effects of the proposed action in conjunction with other activities. A cumulative impact is an impact on the environment which results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

With implementation of the proposed measures prescribed earlier in this document (see proposed action), the primary impact associated of the proposed action would be that of driving on approximately 3 % of the ground surface in the project area and potentially damaging and to a much lesser extent killing a percentage of the brush within the tire paths. This project would effect primarily vegetation and visual resources. No cumulative impacts to other resources are foreseen.

Incremental effects to overall vegetation are considered negligible because:

- 1) they are limited to species composition changes (not vegetation removal/dirt work);
- 2) species composition changes would occur on less than 3 % of the project area;
- 3) species composition shifts would involve only a proportional change among existing native plants (no introduced species); and
- 4) species composition changes would be short term, as new brushy plants would begin to reoccupy the vehicle paths within a few years.

As with visual resources, BLM field inspection of past projects has indicated that 3D seismic projects do not leave major vegetative changes. The amount or percentage of sagebrush actually killed within the 'thinned' corridors (under tire tracks and pads) are considerably less. Cumulative impacts to vegetation are therefore not expected to differ much from those described under environmental consequences above and are expected to be minimal.

Conclusively, considering the relatively low level and short-term nature of the anticipated project impacts and the implementation of the protective measures proposed, the proposed 3D vibroseis project together with on-going activities would not adversely effect elements of the human environment.

### **5.2 No Action Alternative**

Adoption of this alternative would not end oil and gas exploration or development. With or without the geophysical data, well drilling is anticipated in the project area. Without the 3D data, lessees are more likely to drill 'dry holes'; resulting in greater environmental impact than if they had the 3D data. Well pad and access road construction for dry holes

involves removal of vegetation cover. Seismic exploration is the least surface-disturbing means available to obtain subsurface geologic data.

## 6.0 CONSULTATION AND COORDINATION

George Schoenfeld	Physical Scientist	BLM-RSFO
Angelina Pryich	Editor	BLM-RSFO
James Dunder	Wildlife Biologist	BLM-RSFO
Terry DelBene	Archaeologist	BLM-RSFO
Buck Damone	Archaeologist	BLM-RSFO
Lance Porter	Range Management Specialist	BLM-RSFO
Andy Tenney	Recreation Planner	BLM-RSFO / WSO
David Valenzuela	Geologist	BLM-RSFO
James Glennon	Botanist	BLM-RSFO
Dennis Doncaster	Hydrologist	BLM-RSFO
John Henderson	Fisheries Biologist	BLM-RSFO
Kevin Lloyd	Wild Horse Specialist	BLM-RSFO
Ted Murphy	Asst. Field Manager - Minerals	BLM-RSFO
Thomas Williams	Physical Scientist	BLM-RFO
Mary Read	Wildlife Biologist	BLM-RFO
Patrick Walker	Archaeologist	BLM-RFO
Sarah Crump	Archaeologist	BLM-RFO
Krystal Clair	Recreation Planner	BLM-RFO
Frank Blomquist	Wildlife Biologist	BLM-RFO
Mike Calton	Range Management Specialist	BLM-RFO
Mark Newman	Geologist	BLM-RFO
Chuck Reed	Wild Horse Specialist	BLM-RFO
David Simons	NEPA Coordinator	BLM-RFO
Kurt Kotter	Field Manager	BLM-RFO
Clare Miller	Asst. Field Manager - Minerals	BLM-RFO
Sandra Meyers	Asst. Field Mgr - Resources	BLM-RFO

The following agencies, organizations, and individuals received a copy of a scoping letter.

<p>FEDERAL OFFICES</p> <ul style="list-style-type: none"> <li>-U.S. Fish and Wildlife Service</li> </ul>	<p>STATE OFFICES</p> <ul style="list-style-type: none"> <li>- State of Wyoming Senator Rae Lynn Job</li> <li>-State Representative Stephen Watt</li> </ul>	<p>STATE AGENCIES</p> <ul style="list-style-type: none"> <li>- Wyoming DEQ</li> <li>- Wyoming Game and Fish Dept.,</li> <li>-Wyoming Office of State Lands and Investments</li> <li>-Wyoming Office of Federal Land Policy</li> <li>-Wyoming SHPO</li> </ul>
<p>COUNTY/CITY AGENCIES</p> <ul style="list-style-type: none"> <li>- SWEDA</li> <li>- Sweetwater County Land Use Dept.</li> <li>- Sweetwater County Planning Dept.</li> <li>- Mayor of Rock Springs</li> </ul>	<p>NATIVE AMERICAN TRIBES</p> <ul style="list-style-type: none"> <li>- Eastern Shoshone Tribal Council</li> <li>- Northern Arapaho Business Council</li> <li>- Shoshone-Bannock Tribal Council</li> <li>- Ute Tribe Business Committee</li> </ul>	<p>LOCAL MEDIA</p> <ul style="list-style-type: none"> <li>- Casper Star-Tribune</li> <li>- Rock Springs Rocket Miner</li> </ul>
<p>OTHER AGENCIES , ASSOCIATIONS, AND INDIVIDUALS</p>		
<ul style="list-style-type: none"> <li>-Biodiversity Associates/ Friends of the Bow</li> <li>-Frontier of Freedom – People for the USA</li> <li>-Leonard Hay</li> <li>-Petroleum Association of Wyoming</li> </ul>	<ul style="list-style-type: none"> <li>-Rock Springs Grazing Association</li> <li>-Rocky Mountain Elk Foundation</li> <li>-Sierra Club</li> <li>-SWWY Mule Deer Foundation</li> <li>-The Fund for Animals</li> </ul>	<ul style="list-style-type: none"> <li>-The Nature Conservancy Public Lands Program</li> <li>-Wyoming Outdoor Council</li> <li>-Wyoming Wildlife Federation</li> </ul>

## 7.0 REFERENCES

BLM Washington Office, 1994, 3150 Onshore Oil and Gas Geophysical Exploration - Surface Management Requirements Manual. BLM Washington Office

BLM Washington Office, 1994, H-3150-1 Onshore Oil and Gas Geophysical Exploration - Surface Management Requirements Handbook. BLM Washington Office, Washington, District of Columbia.

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Fertig, Walter, 1994, Wyoming Rare Plant Field Guide, multi-agency cooperative publication. Available through the Bureau of Land Management, Cheyenne Wyoming, and the Nature Conservancy Wyoming Natural Diversity Database, Laramie, Wyoming.

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Thomas, Rex, PhD, 1995, Evaluation of Impacts of the Belridge Geophysical Exploration Project on small mammal burrows and the endangered plant Kern Mallow in the Lokern Natural Area, Kern County, California. BioEnvironmental Associates, Fort Collins, CO. On file at the BLM Bakersfield District Office, Bakersfield, California.

Young, D.K. and P. Sawyer, 1981, Influence of seismic vibrators on Utah prairie dog (*Cynomys parvidens*) burrows. USDI Bureau of Land Management Staff Report.

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U.S. Fish & Wildlife Service, 2002, Mountain Plover Survey Guidelines , distributed locally by US FWS Ecological Services Office, Cheyenne, Wyoming.

Wyoming Game & Fish Department, n.d., Sage Grouse Habitat Requirements and Development, Habitat Extension Bulletin No. 31, Wyoming Cooperative Fishery and Wildlife Research Unit, Cheyenne, Wyoming.

***APPENDIX A - Notice of Intent (NOI) and Amendments***

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB NO. 1004-0162  
Expires: August 31, 1993

NOTICE OF INTENT TO CONDUCT OIL AND GAS  
GEOPHYSICAL EXPLORATION OPERATIONS

BLM Case No.  
WY-040-0602-03  
State Case No.  
037-02005G

Company Name <u>VERITAS DGC LAND INC.</u>		Project Name <u>HAY RESERVOIR 3-D</u>	
Address <u>10300 TOWN PARK</u>		Type of Bond <u>NATIONWIDE</u>	Amount <u>\$150K</u>
City <u>HOUSTON</u>	State <u>TX</u>	Bond Number/Where Filed <u>COLO. STATE BLM OFFICE</u>	
Zip Code <u>77072</u>	Phone No. (Include area code) <u>832-551-1057</u>	Crew Number <u>BOND # 5853137</u>	
<u>MIKE DIGHANS 713-201-9924</u>		<u>JULIE GORDON</u>	
Contractor/Client		LOCAL INFORMATION	
Address		Address	
City	State	City	State
Zip Code	Phone No. (Include area code)	Zip Code	Phone No. (Include area code)

I hereby file this Notice of Intent to Conduct Oil and Gas Geophysical Exploration Operations across and upon Public Lands (give description of lands by Township(s), Ranges(s), and Section(s)): A map shall be furnished showing the approximate location of the lines to be used on Public Lands. The map shall be of a minimum scale of one-half inch to the mile for the general location, and should be at least two and one-half inches to the mile for specific project location to accompany the Notice of Completion.

T22N-R97W-SEC. 2,4,5,10,12,14,16      T25N-R97W-SEC 1-15,17-35  
T22N-R96W-SEC. 6      T25N-R98W-SEC. 1-5,7-30,32-35  
T23N-R96W-SEC. 1-15,17-34      T26N-R97W-SEC. 16,19-22,26-35  
T23N-R97W-SEC. 1,3-6,9-15,PT 19,PT 20, 21-36  
T23N-R98W-SEC. 1,2, PT 11, PT 12      T26N-R98W-SEC. 25,34-36  
T24N-R96W-SEC. 5,6,7,8,17,18,19-24,27-35  
T24N-R97W-1-15,17-35  
T24N-R98W-1-6,8,15,21-27,34,35  
T25N-R96W-18-19,29-32

Approximate Date of Commencement of Operations: DEC. 28, 2001 SURVEY - JAN 15 2002

The type of operation to be conducted is:

- |   |   |
|---|---|
| TECHNIQUE                                     | METHOD                                    |
| <input type="checkbox"/> Shothole             | <input type="checkbox"/> Surface shot     |
| <input checked="" type="checkbox"/> Vibroseis | <input type="checkbox"/> Truck Mounted    |
| <input type="checkbox"/> Other (explain)      | <input type="checkbox"/> Portable         |
|   | <input checked="" type="checkbox"/> Buggy |

RECORD

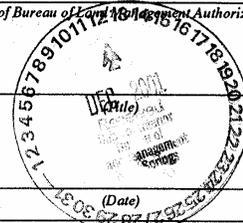
Type and amount of Explosive: \_\_\_\_\_  
 Shotpoint pattern: \_\_\_\_\_  
 Shothole Depth: \_\_\_\_\_  
 No. Source Points/Mile: \_\_\_\_\_  
 Provide diagram if multi-hole pattern: \_\_\_\_\_

The undersigned agrees that the oil and gas exploration operations shall be conducted in compliance with all Federal, State and local laws, ordinances or regulations which are applicable. Federal regulations are contained in 43 CFR 3150. The Crew Chief, Party Manager, or other responsible representative shall attend a pre-work conference prior to entering onto the public land to sign the general terms and conditions relative to this project, and any site specific special conditions developed by the local Authorized Officer.

Mike Dighans 713-201-9924  
(Signature of Appropriate Geophysical Representative)

\_\_\_\_\_  
(Signature of Bureau of Land Management Authorized Officer)

CONSULTANT  
(Title)



Dec 11, 2001  
(Date)

Veritas Land Surveys



**VERITAS**  
Geophysical Integrity

April 19, 2002

Bureau of Land Management  
Attn: George Schoenfeld  
Rocks Springs Field Office

Ph: (307) 352-0271

Re: Additional sections added to the Hay Reservoir 3-D

George;

Veritas DGC Land Inc. is requesting additional sections be added to the Hay Reservoir 3-D in Sweetwater County, WY. Please add them to NOI File # WY-040-OG02-03.

Additional Sections: T23N-R95W: SECTION 19,30  
T23N-R96W: SECTION 25,26,27,32-34.  
T22N-R96W: SECTION 2,4,6.

Please forward a copy of this to Rawlins and any other necessary parties.

Call me @ 713-201-9924 if you need anything further or E:mail me @ [mldighans@cs.com](mailto:mldighans@cs.com).

Thank you,

A handwritten signature in black ink, appearing to read "Mike Dighans".

Mike Dighans, Consultant  
Veritas DGC Land Inc.  
PH: (713) 201-9924



Veritas Land Surveys



October 16, 2003

Bureau of Land Management  
Attn: George Schoenfeld  
Rocks Springs Field Office  
Travis Bargsten  
Rawlins Field Office



Ph: (307) 352-0271  
Ph: (307) 328-4387

Re: Additional acreage to the Hay Reservoir 3-D

George & Travis;

Veritas DGC Land Inc. is requesting that the sections listed below be added to and incorporated into the Hay Reservoir 3-D.

T25N-R95W: Sec. 29, 30, 34.  
T24N-R98W: Sec. 30, 31.  
T24N-R95W: Sec. 2-5, 9-16, 22-26, 34-36.  
T23N-R98W: Sec. 5, 8.

I am sending you a new maps to cover the revised boundary.

Please call me @ 713-201-9924 if you need anything further or E:mail me @ [mldighans@cs.com](mailto:mldighans@cs.com).

Thank you for all your help,

A handwritten signature in black ink, appearing to read "Mike Dighans".

Mike Dighans, Consultant  
Veritas DGC Land Inc.  
PH: (713) 201-9924