

# **Huntington Valley Oil and Gas Exploration Project Master Surface Use Plan**

**Elko County, Nevada**

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**Presented to:**

**Bureau of Land Management  
Elko District – Tuscarora Field Office  
3900 East Idaho Street  
Elko, Nevada 89801**

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# Huntington Valley Oil and Gas Exploration Project Master Surface Use Plan

## Introduction

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The following Exhibits are attached to this Surface Use Plan of Operations (SUPO):

Exhibit "A"	Project Maps
Exhibit "B"	List of Proposed Well Pads
Exhibit "C"	Transportation Plan
Exhibit "D"	Typical Drawings
Exhibit "E"	Fire Prevention Plan Measures
Exhibit "F"	Sage Grouse Mitigation Plan (to be provided)
Exhibit "G"	Example Integrated Weed Management Plan, Weed and Vegetation Survey Report, and Example Noxious Weed Plan
Exhibit "H"	Example Reclamation Plan and Example Reference Areas Report
Exhibit "I"	Master Drilling Plan (to be provided)
Exhibit "J"	Narrative of Completion and Stimulation
Exhibit "K"	Example Stormwater Pollution Prevention Plan
Exhibit "L"	Wildlife Survey Report

Noble Energy, Inc. (Noble) proposes to conduct an oil and gas exploratory drilling program in the Huntington Valley project area which includes drilling, completion, production, and abandonment of a maximum of 20 wells on Bureau of Land Management (BLM) administered lands and private lands located approximately 21 miles south of the city of Elko in Elko County, Nevada. Livestock grazing is the primary existing surface use. Noble has identified 41 potential well pad locations; however, because this is an exploration program, no more than 20 well pads will be constructed over a two-year period or more. During the first year, Noble proposes to either construct two well pads with two test wells on each pad, or to construct four well pads with one well on each pad. A total of four vertical or directional wells will be drilled and completed under both scenarios during the first year. Sixteen well pads with 16 wells (one well per pad) may be developed in subsequent years. During the following years, up to four of the proposed 16 wells may be directional wells, depending on the results of other well tests.

Noble will conduct a 3D Seismic Program in the Huntington Valley project area during the fall of 2013. Noble will use the results of the seismic program, previous 2D seismic data, and previous well results from the project area to select locations that minimize the likelihood of encountering drilling hazards. The seismic data will also be used to select locations which allow for separation of the hydrocarbon bearing zones from any potential water resources of the state.

Noble anticipates that 12 wells could produce up to 250 barrels of oil per day and that eight wells could produce up to 100 barrels of oil per day. In addition to oil, a small amount of natural gas may be produced, which will run the production equipment. Excess natural gas will be flared in accordance with NTL-4A (Royalty or Compensation for Oil and Gas Lost). The lands include 34,201 acres of federal surface and federal minerals administered by the BLM Elko District, Tuscarora Field Office (54 percent of the project area); 753 acres of federal surface and private minerals (1 percent of the project area); 8,380 acres of private surface and federal minerals (13

percent of the project area); 16,774 acres of private surface and private minerals (28 percent of the project area); and 3,387 acres of private surface and unknown mineral ownership, for a total of 63,494.7 acres (see Table 1). The proposed operations will comply with all applicable federal Onshore Oil and Gas Orders. Noble is proposing several design features, plans, and Best Management Practices (BMPs) to mitigate impacts to sensitive resources as provided in this Master Surface Use Plan of Operations (SUPO).

**Table 1  
Surface and Mineral Ownership in Huntington Project Area**

<b>Surface Ownership</b>	<b>Mineral Ownership</b>	<b>Number Of Acres</b>	<b>Percent of Project Area</b>
Federal	Federal	34,201.3	53.9
Federal	Private	752.8	1.2
Private	Federal	8,379.7	13.2
Private	Private	16,774.0	27.9
Private	Unknown	3,386.9	5.6
Total		63,494.7	100.0

One drilling rig and one completion team will be required during the first year, and possibly two drilling rigs and one completion team may be required during the second year. A Master Drilling Plan is provided in Exhibit “I” and a Narrative of Completion and Stimulation is presented in Exhibit “J”. Depending on the well pads selected for exploration, the proposal also includes possibly upgrading up to 13.13 miles of existing roads and possibly constructing up to 9.92 miles of new local roads and up to 8.58 miles of new resource roads.

### **Well Site Locations**

The results of the Huntington Valley Exploration Program will determine whether economic quantities of oil can be produced in the Huntington Valley Area. The targeted formations will be the Humboldt, Indian Well, and Elko formations. The range in depths is variable given the basin shape, subsurface dip of the multiple formations under investigation, and faults as determined via 3D Seismic imaging. The target zones for the wells occur at true vertical depths between 7,000 and 13,000 feet (see below). Targets for possible directional wells will be determined by the results of the vertical wells. Fewer wells may be drilled during exploration than are proposed due to well test results and geologic and market uncertainties. Well locations will be determined utilizing 3D Seismic data. Locations will be selected to minimize the likelihood of encountering faults and/or drilling hazards while still targeting suitably productive zones.

<b>Formation</b>	<b>Top MD (ft)</b>	<b>Substance</b>
Valley Fill	Surface	Water, possible oil/gas shows > 3,000 ft TVD
Humboldt	Surface – 2,000	Water, oil, gas
Indian Well (if present)	4,000 – 6,000	Water, oil, gas
Elko (if present)	8,000 – 11,000	Water, oil, gas
Paleozoics – undifferentiated	7,000 – 13,000	Water, oil, gas

If drilling results in an unproductive well, the well would be plugged and abandoned in compliance with the Federal Onshore Oil and Gas Orders and the State of Nevada regulations within 90 days of well completion, weather permitting.

## Surface Use Plan

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### 1. Existing Roads

- A. The Huntington Valley project area is accessed by several existing roads, including Interstate-80 (I-80); U.S. Highway (US) 40; Nevada state routes 225 (Mountain City Highway), 227 (Lamoille Highway) and 228 (Jiggs Highway); Circle L Ranch Road (Elko County - CR Road 716); Smith Creek Road (Elko CR 716A); Huntington Road (a BLM road); and unnamed BLM and private roads in the project area. Within the city of Elko, US 40 is the I-80 Business Route (Idaho Street) and State Route (SR) 227 is South 5<sup>th</sup> Street. A Transportation Plan identifying existing roads that will be used to access the project area is included as Exhibit "C."
- B. Existing roads will be maintained in conditions as good as or better than conditions that existed prior to commencement of the exploration program. All equipment and vehicles will be confined to the routes shown on Map 1 in Exhibit "A". Maintenance of the access roads will continue until abandonment and reclamation of the well pads is completed.

### 2. New or Upgraded Access Roads

- A. The well pads selected for development will determine which existing roads will be upgraded and which new roads will be built. The Transportation Plan shows the locations of potential roads that will need to be upgraded or constructed to access the well pads (see Exhibit "C"). Upgrading of existing roads and construction of new local roads will generally require a 39-foot width for construction with a final road width of 29 feet with 5 feet for road ditches (2.5 feet on either side of the road) and a 24 foot running surface for the road (see Figure 1 in Exhibit "D"). Construction of new resource roads will generally require a 31-foot width for construction with a final road width of 21 feet with a 16 foot running surface for the road (see Figure 2 in Exhibit "D"). The roads will be crowned, ditched, and graveled in accordance with the Gold Book Standards and BLM Road Manual 9113. An estimated 24 truck turnouts will be required in areas where there is not a clear line of sight. Each turnout is estimate to be 500 feet x 15 feet (0.16 acre).
- B. After well completion, traffic to each well site will depend on well production. Approximately two oil trucks and 1.4 water trucks will visit each well producing 250 barrels of oil per day, and one oil truck per day and one produced water truck every other day will visit each well producing 100 barrels of oil per day. Additional traffic to each well site will include one pumper truck (pick-up) per day and one maintenance truck approximately 10 days per year. Well service trips could be rescheduled or postponed during periods of wet weather when vehicle travel could cause rutting. Up to two water trucks per day could be required throughout the project area for dust control. Dust suppression will be implemented on an as-needed basis.
- C. All equipment and vehicles will be confined to the travel routes laid out on Map 1 in Exhibit "A" unless otherwise approved by the BLM and applied for by Noble.

- D. Dust will be controlled as necessary on roads during construction (drilling and completions) and operations through one or more of the following measures:
- Watering of disturbed areas and dirt roads on a regular basis;
  - Pre-watering of areas to be disturbed;
  - Graveling of roadways, storage areas, and staging areas;
  - Following posted speed limits and where not posted, and not exceeding 20 miles per hour;
  - Applying water sprays on material storage piles on a regular basis;
  - Ceasing construction when high winds inhibit dust control;
  - Possibly using other dust suppressants such as DirtGlue, magnesium chloride, and tree sap. If used, magnesium chloride would not be applied within 100 feet of a riparian area; and
  - Re-vegetating reclaimed areas.

### **3. Location of Proposed Wells**

- A. All proposed wells will be on the proposed pads shown on Map 1 in Exhibit "A" and listed in Exhibit "B".

### **4. Location of Proposed Production Facilities**

- A. The well pads will be up to 6 acres in size during drilling and completion (see Figure 3 in Exhibit "D"). After interim reclamation, each production well pad will be 3.5 acres or less (see Figures 4 and 5 in Exhibit "D"). All areas will be reclaimed and reseeded after operations are completed (final reclamation).
- B. Typical production pad drawings indicating the location of production facilities are shown on Figure 5 in Exhibit "D".
- C. Equipment and facilities located on the production pad will include the wellhead, pumping unit, vertical treater, re-circulating pump, one gas flare, a 2-phase separator building, line heater, generator, four 400-bbl oil tanks, two 400-bbl water tanks, a fuel tank, and possibly a water well. A mobile modular building will provide temporary housing accommodations on the well pad during drilling. If two wells are located on a single well pad, production equipment will be shared to the greatest extent possible.
- D. No off-pad ancillary facilities are planned during the exploration phase.
- E. All facilities or structures will be painted a natural color in a non-reflective finish (or BLM Standard Environmental Color if specified by the BLM) that blends with the background landscape. In cases of split estate associated with federal minerals, the surface equipment would be painted in accordance with BLM requirements unless the private surface owner requests differently.
- F. Lighting during drilling and completions will follow "dark sky" lighting practices.
- G. Permanent lighting during operations will be manually operated by operations personnel and will include lighting for the valve building, treater house, and load

rack area. Lighting used during operations will also follow “dark sky” lighting practices.

## **5. Location and Types of Water Supply**

Eight locations for water wells have been identified along local and resource roads in the project area to provide water for drilling, completion and dust control (see Map 1 in Exhibit “A”). Identified water well locations may require additional biological and cultural surveys which will be done prior to disturbance.

The number and location of wells that will actually be drilled will depend on the location of the 20 well pads that are constructed as part of this exploration program. Water wells will be drilled to an approximate depth of 500 feet and will require approximately 1 acre of disturbance. The water wells will remain open until Noble determines that no additional oil wells will be drilled in the vicinity and therefore, will be a temporary impact. Water may be transferred from water well locations to pads under construction via tanker truck or temporary pipeline. The pipeline would be a flexible fiber line similar to a fire hose that would run beside the road ditch between the water well and the drilling rig water storage tank.

Water supply wells on private land could be used by the landowner during Noble’s activities and turned over to the landowner for agricultural use once Noble’s activities conclude. Surface water and groundwater supplies will be developed in compliance with applicable laws and groundwater permitting requirements. All water uses will be permitted through the Nevada Division of Water Resources (NDWR) and/or NDEP, as appropriate.

Water for completions may also be supplied by a water utility (City of Elko and/or City of Wells) as a temporary or backup supply source. After the first year of drilling, water may be obtained by the temporary conversion of agricultural water rights in compliance with applicable federal and state law. Any such water usage could be transferred by tanker truck over existing roads or through pipelines to minimize traffic and dust control.

Anticipated water usage for drilling includes approximately 10,000 barrels of water to drill one vertical well and approximately 20,000 barrels to drill one directional well. Well completion is expected to require approximately 30,000 barrels of water for a vertical well, and approximately 200,000 barrels for a directional well. Actual water volumes used during operations will depend on the depth of the well, length of directional sections, and any losses that might occur during the operation.

Traffic associated with water supply is described in the Transportation Plan (Exhibit “C”).

Noble understands the importance of protecting water resources in Nevada. In alignment with this, Noble intends to enter into a Memorandum of Understanding (MOU) with the Nevada Division of Minerals (NDOM) and the Nevada Division of Environmental Protection (NDEP) to study groundwater and hydrologic systems in the project area. This study would be carried out by a third party, the Desert Research Institute, a well-respected scientific organization based in Nevada. The investigation would address aquifer and hydrologic characteristics, water quantity and quality parameters, and other appurtenant information relevant to the development, use and management of water resources in compliance with well-established principles and practices employed in

hydrology and water resource engineering disciplines. Results will be made public through the NDWR and NDEP. Water well information is collected and managed by the NDWR. Known ground water resources in and near the project area are shown on Map 2 of Exhibit "A".

## 6. Construction Activities

- A. Construction, reclamation, and/or routine maintenance will not be conducted during periods when the soil conditions for construction could lead to impacts to the surrounding environment, or when watershed damage is likely to occur as a result of these activities.
- B. Gravel used during construction may be purchased from a certified weed free commercial facility or from a local rancher who has a certified weed-free gravel pit.
- C. Approximately 2.5 acres of each 6-acre drilling pad will be reclaimed and reseeded after drilling and completion.

## 7. Methods for Handling Waste

- A. **Cuttings.** Surface hole cuttings will be drilled with water-based mud and stacked on location during drilling for subsequent use in well pad reclamation. Production hole cuttings will also be drilled with water-based mud and stacked on location for the duration of drilling and completion activities. Cuttings will be land-farmed on-site to treat any potential hydrocarbon impacts. Cuttings will then be sampled and buried on-site at depths greater than 3 feet to avoid potential impacts to plant root zones. Cuttings that do not fit this waste profile will be disposed at an approved facility (Clean Harbors) located between Wendover, Nevada and Salt Lake City, Utah during exploration.
- B. **Drilling fluids.** Salts and/or chemicals used in the mud system and other drilling fluids will be recycled and reused in the drilling mud system. Noble will utilize pitless or closed loop drilling systems and will not construct reserve pits. Any non-recycled drilling fluids will be land-farmed with the drill cuttings or disposed at an approved facility (Clean Harbors) located between Wendover, Nevada and Salt Lake City, Utah during exploration.
- C. **Produced Fluids.** Liquid hydrocarbons and other fluids produced during well completion will be placed in steel tanks on the well location. Any unintentional release of oil, gas, salt water, or other potentially hazardous substances will be cleaned immediately and removed to an approved disposal site (Clean Harbors) located between Wendover, Nevada and Salt Lake City, Utah during exploration. Noble may drill a disposal well on one of the 20 selected pads. Any disposal well activity will be permitted through the Nevada State Engineer's Office and the NDEP. Produced water, drilling fluids, and all waste associated with exploration and production of crude oil, natural gas or geothermal energy is exempted from RCRA and therefore, the standard RCRA evaluation is not required.
- D. **Sewage.** Portable, self-contained chemical toilets will be provided for human waste disposal. At the end of drilling and completion, or as required, the toilet holding tanks will be pumped and the contents disposed in an approved sewage disposal facility. Sewage disposal will be in strict accordance with the NDEP rules and regulations regarding sewage treatment and disposal.

- E. **Garbage and Other Waste Materials.** All garbage and non-flammable waste materials will be contained in a self-contained, portable dumpster or trash cage, especially to eliminate attracting ravens to the project site for sage grouse predator control as described in the Sage Grouse Mitigation Plan (Exhibit "F"). At the end of drilling and completion operations, or as needed, the accumulated trash will be hauled off-site to a NDEP approved sanitary landfill.
- F. **Debris.** Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage will be cleaned and removed from the well location. No potentially adverse materials or substances will be left on location.
- G. **Hazardous Materials Management.**
1. All drilling wastes identified as hazardous substances by the Comprehensive Environmental Response Compensation Liability Act (CERCLA) will be removed from the drilling location and not reused at another location. Any such hazardous substances will be disposed at a hazardous waste facility approved by the U.S. Environmental Protection Agency (EPA).
  2. Noble and its contractors will comply with all applicable Federal, State, and local laws and regulations, existing or hereafter enacted or promulgated, with regard to any hazardous material, as defined in this paragraph, that will be used, produced, transported or stored on the oil and gas lease, "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the CERCLA of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulation. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the RCRA of 1976, as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous material also includes any nuclear or nuclear by-product material as defined by the *Atomic Energy Act of 1954*, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101 (14), 42 U.S.C. 9601 (14) nor does the term include natural gas.
  3. No hazardous substances or wastes will be stored on the location after completion of the well.
  4. Chemicals brought to location will be on the Toxic Substance Control Act (TSCA) approved inventory list.
  5. All hazardous substances brought to the location will have a Material Safety Data Sheet (MSDS), and will be properly handled so as to not cause harm to people or the environment.
  6. All MSDSs will be kept on location until the hazardous material is properly disposed of in accordance with federal law.

7. Noble will maintain a file, per 29 CFR 1910.1200 (g) containing current MSDSs for all chemicals, compounds, and/or substances which will be used during the course of construction, drilling, completion, and production operations for this project. Hazardous materials (substances) which may be found at the site may include drilling mud and cementing products which are primarily inhalation hazards, fuels (flammable and/or combustible), materials that may be necessary for well completion/stimulation activities such as flammable or combustible substances and acids/gels (corrosives). The opportunity for Superfund Amendments and Reauthorization Act (SARA) listed Extremely Hazardous Substances (EHS) at the site is generally limited to proprietary treating chemicals. All hazardous and Extremely Hazardous Substances and commercial preparations will be handled in an appropriate manner to minimize the potential for leaks or spills to the environment.
8. All undesirable events (fires, accidents, blowouts, spills, discharges) as specified in Notice to Lessees (NTL) 3A will be reported to the BLM Tuscarora Field Office. Major events will be reported verbally within 24 hours, followed by a written report within 15 days of their occurrence. "Other than Major Events" will be reported in writing within 15 days. "Minor Events" will be reported on the Monthly Report of Operations and Production (Form 3160-6).
9. All installed production facilities with the potential to leak or spill oil, condensate, produced water, glycol, or other fluid which might be a hazard to public health or safety would be placed within an appropriate impervious secondary containment structure that would hold 110 percent of the capacity of the largest single container for 72 hours. Secondary containment would consist of corrugated steel containment berms or earthen berms. Compaction and construction of earthen berms would be performed to prevent lateral movement of fluids through the utilized materials. All loading lines would be placed inside the containment berm.

## **8. Well Site Layout**

- A. A typical drilling pad is shown on Figure 3 of Exhibit "D" and will be up to 6 acres. The estimated size for the well pads will accommodate cuts and fills, topsoil storage, and stormwater control BMPs.

## **9. Plans for Surface Reclamation**

- A. Rat and mouse holes will be backfilled and compacted from bottom to top immediately upon release of the completion rig from the location.
- B. Producing Operations:
  1. Backfilling, leveling, and re-contouring are planned as soon as possible after cessation of drilling and completion. Waste and spoil materials will be disposed immediately upon cessation of drilling and completion operations.

2. For production, fill slopes will be reduced from a 1.5:1 slope to a 3:1 slope and cut slopes will be reduced from a 2:1 slope to a 3:1 slope by pushing the fill material back up into the cut (see Figure 4 in Exhibit "D").
3. Upon completion of backfilling, leveling, and re-contouring, all disturbed surfaces not needed for future operations will be scarified to a depth of one (1) foot and the stockpiled topsoil will be evenly distributed to a depth of six (6) inches over the reclaimed area(s).
4. Prior to commencement of seeding operations, the seedbed will be prepared by disking on the contour to a depth of four (4) to six (6) inches, leaving no depressions that would trap water or form ponds.
5. If conditions permit, the restored portions will be left rough and broadcast seeded. All disturbed surfaces (including the access road and well pad areas) will be re-seeded using a seed mixture recommended by the BLM or surface owner.
6. If the drilling method of seeding is utilized, it will be drilled on the contour with a seed drill equipped with a depth regulator in order to ensure even depths of planting. Seed will be planted between one-quarter (1/4) to one-half (1/2) inches deep, with shrub seeds planted in rows separate from the grass seeds. In this case, the bins on the outside rows of the drill will be utilized for shrub seeds.

The broadcast method may be used instead of the drilling methods. If this is the case, the surface will be left in a rough condition and the seed mixtures will be doubled. The preferred method will be approved by the BLM at the time of reclamation.

7. Fall seeding will be completed after September 1 and prior to ground frost. If applicable, spring seeding will be completed after the frost has left the ground and prior to May 15. The seeding will be repeated until the BLM Authorized Officer (AO) determines that a satisfactory stand is achieved. The first evaluation of growth will be made following the completion of the first growing season. Re-seeding activities are considered best in the fall, unless requested otherwise by the BLM AO or surface owner.
8. Mulching may be required on soils with low reclamation potential; where mulching is deemed necessary a certified weed free straw or hay mulch will be crimped into the soil at an application rate of 2 to 4 tons per acre. Mulch may be applied by blowers, spreaders, or by hand. The mulch strand lengths would be long enough to be anchored by crimping. The mulch will be crimped to a depth of 2 to 3 inches. The mulch will be spread uniformly over the area so that at least 75 percent of the surface is covered.

## C. Abandoned Well Locations

1. Upon final abandonment of the well location, gravel will be removed from the access road surface and well location (as directed by the BLM AO), water diversion installed as needed, and both the access road and well location will be restored to approximately the original ground contour(s) by pushing the fill material back into the cut and up over the backslope.
2. No depressions will be left that would trap water or form ponds. All disturbed surfaces (including the access road and well pad areas) will be re-seeded and re-vegetated sites will be monitored to ensure that desired species are thriving and invasive/noxious weeds are not present.

## 10. Surface Ownership

Within the Huntington Valley project area, 55 percent of the surface is under the administrative jurisdiction of the BLM and 45 percent of the surface is under private ownership (see Map 1 in Exhibit "A").

## 11. Other Information

### Surveying

- Well pad locations have been staked. A survey of the proposed access roads and well pad locations will be completed by a registered professional land surveyor. A preliminary center stake survey with access roads by a professional land surveyor has already been completed on federal lands and private lands with federal minerals.

### Riparian Area Buffer

- Generally, proposed well pads and access roads have been placed at least 400 feet from riparian areas and the Zunino Reservoir; however, approximately 3.97 miles of existing road planned for access and 0.04 mile of new road are within the 400 foot riparian area buffer. Existing roads proposed for upgrading within the 400 foot buffer will not be upgraded outside of the existing disturbance. Proposed new road locations will be addressed during permitting. There is no proposed disturbance within a 400 foot buffer around the Zunino Reservoir (see Map 2 in Exhibit "A").

### Cultural Resources

- A cultural resource inventory was conducted in accordance with applicable state and federal requirements on lands administered by the BLM and on private lands where landowner permission was obtained. A Class III Cultural Inventory Report was submitted to the BLM on August 30, 2013 with a recommendation of no historic properties affected for the Huntington Valley Oil and Gas Exploration Project.
- If unknown cultural resources are found during operations, Noble will implement an Unanticipated Discovery Plan for Cultural Resources, which includes immediate stoppage of all work within thirty (30) meters of the discovery as directed by the BLM and immediate notification of the BLM AO.

- Prior to commencement of operations, Noble will inform all employees and contractors through job site safety orientations about compliance requirements associated with the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, the Paleontological Resources Preservation Act, and the National Historic Preservation Act.
- Noble will suspend all operations that disturb such materials and immediately contact the BLM AO. Operations will not resume until the BLM AO issues authorization to proceed.

#### Weed Control

- Noble will be responsible for weed control on disturbed areas within the exterior limits of the project area and will consult with the BLM AO and/or local authorities for acceptable weed control measures. Noble will follow an Integrated Weed Management Plan which includes measures for prevention, monitoring, and treatment of noxious weeds. An example plan is provided in Exhibit "G" along with a Weed and Vegetation Survey Report for this project. A Noxious Weed Plan is also included in Exhibit "G".

#### Wildlife

- Sage-grouse lek surveys were conducted for the project area plus a 3-mile buffer around the entire project area. The results of these surveys were submitted to Nevada Department of Wildlife (NDOW) and the BLM Tuscarora Field Office biologist assigned to the project. Two surveys for new or undocumented leks (aerial fixed-wing flights) and three ground surveys of each lek were conducted to confirm activity status and record lek attendance numbers. Lek attendance numbers were used for monitoring trends and impacts in accordance with standard BLM and NDOW survey protocols.
- Protective measures to reduce impacts to pygmy rabbits, sage grouse, and critical winter pronghorn habitat will be determined through adaptive management and using a phased approach to mitigations and stipulations. Noble anticipates a Wildlife Working Group to enforce and implement this adaptive and phased approach made up of one vote each from Noble, NDOW, and the BLM. As the project progresses with disturbances and cumulative impacts, the group will meet and implement adaptive management measures. It is anticipated that timing stipulations may not apply initially for initial locations (two pilot locations) but as there is more drilling (appraisal location) and pad development, more monitoring, adjustments (up or down) to mitigation requirements and timing stipulations would be enforced. The caveat is for critical winter range for antelope, the stipulations will depend on the severity of the winter and cumulative impacts of disturbance. Pygmy Rabbit adaptive management will depend on the disturbances in relation to proximity of colony concentrations.
- Pygmy rabbit surveys were conducted on BLM-administered lands. Vegetation types, wetlands, large game species, raptors, and general wildlife observations were also recorded. The results of the biological surveys were utilized to adjust proposed well pad locations to minimize effects to pygmy rabbits.
- Where proposed disturbance is within 100 feet of pygmy rabbit burrow, the area will be brush-hogged or mowed within 48 hours of ground disturbance to encourage pygmy rabbits to leave the area.

- The Wildlife Survey Report for Exploration Activity in the Huntington Valley Project Area is attached as Exhibit “L”.
- Noble will conduct a spring raptor survey and a 2 to 4 mile Golden eagle survey in the spring of 2014.
- Noble will inform employees and contractors through job site safety orientations that harassing (including feeding, approaching, pursuing, or otherwise intentionally disturbing) or shooting wildlife will not be permitted; dogs may not be brought to the project area; no firearms will be allowed on-site; and there will be no littering, including trash that was not secured properly and has been dispersed by wind.
- Noble Commitments for wildlife (pygmy rabbits, antelope, and sage grouse) – to be provided.

#### Soils and Revegetation

- No truck traffic will be operated during periods of, or in areas of, saturated ground when surface rutting could occur.
- Noble has prepared and will implement a Reclamation Plan in consultation with the BLM for approval (see Exhibit “H”). Noble will also implement a baseline ecosite vegetation and weed survey for each well pad prior to construction to ensure proper seed mix design which is applicable to ecosites already existing at the location and to ensure protection from erosion due to cattle grazing during interim reclamation.

#### Water Quality

- Noble will prepare, implement, and follow a Spill Prevention Plan and a Stormwater Management Plan in accordance with state regulations and BLM approval.
- All installed production facilities with the potential to leak or spill oil, condensate, produced water, glycol, or other fluid which might be a hazard to public health or safety will be surrounded by secondary containment adequate to retain at least 110 percent of the volume of the largest vessel with sufficient freeboard/storage for precipitation in the containment area in the event of a release.
- Wellheads, above-ground flowlines, valves, fittings, vessels, and storage tanks will be inspected on a regular basis for any signs of potential failure. Noble maintains a flowline maintenance program for its flowlines.
- Containment areas will be maintained as dry as possible to reduce corrosion on tanks and to maintain maximum containment capacity.
- A system of earthen dikes with crushed rock will be used to control and contain oil spills to prevent escape before cleanup.
- Noble will drill and case wells with multiple stages of cement and steel pipe to protect groundwater resources in accordance with API (American Petroleum Institute) standards (see Figures 6 and 7 in Exhibit “D”).
- Noble will clean up diesel, hydraulic fuel, or other spills, including contaminated soils. All spill-related material will be hauled to an approved disposal site.

- Fueling will not occur within 300 feet of any riparian areas or standing or flowing surface water including streams, ponds, springs, seeps and stock reservoirs.

#### Fire Prevention Measures

- Fire prevention measures are included as Exhibit “E”.

#### Sage Grouse Mitigation Plan

- The Sage Grouse BMPs are included in the Sage Grouse Mitigation Plan in Exhibit “F”.
- For sage grouse mitigation, a Wildlife Working Group will be established made up of one each from Noble, NDOW, and the BLM for the implementation of the exploration program and adaptive management measures as the project progresses through it’s phases. The following elements will be part of mitigation for sage grouse:
  - A project-specific MOU will be in place prior to permit approval for disturbance between NDOW, Noble, and the BLM and will address how mitigation measures will be implemented including cost per acre, escrow, noise mitigations, phased development approach, and seasonal restrictions.
  - The project will adhere to Governor's State Sage Grouse Mitigation Bank Credit program once in place.
  - The approach for offsetting winter habitat impacts is phased. Noble will have mitigation ratio costs and noise mitigation the first year with no seasonal restrictions. However, seasonal stipulations will apply the following year with possibility for adjustments per the Wildlife Working Group through adaptive management and increased habitat use data.

#### Workforce

- Noble estimates that peak construction workforce will include 119 workers, assuming that two drilling rigs and one completion team are in operation. The peak workforce will occur during the second year as well pads and access roads are constructed and wells are drilled and completed (see Table 2). Noble will provide on-site (well pad) accommodations for drilling crews (see Figure 10 in Exhibit “D”). This will reduce traffic, minor source emissions, dust, and impacts on wildlife, and increase safety. Once all wells are drilled and completed, the operations workforce will include one pumper, one maintenance worker, and up to 19 oil truck drivers, 15 produced water truck drivers, and 2 water truck drivers for dust control. The actual number of truck drivers will depend on the amount of oil and water produced per well and the location of produced water disposal (either off-site or in an on-site injection well).
- Noble estimates that drilling and completion crews (approximately 75 percent of the construction workforce) will consist of workers who live outside of Elko County and that the remainder (approximately 25 percent) of the construction workforce will be Elko County residents. Residents of Elko County are considered to be local workers and residents of other counties are considered to be non-local workers. During operations, Noble expects that the pumper, maintenance worker, water truck (dust control), and produced water truck drivers will come from Elko County. Oil truck drivers are expected to be non-local

workers employed by crude oil transportation companies based outside of Elko County. Overall, Noble expects that approximately half of the operations workforce will be local and the other half non-local.

- On-site accommodations for drilling crews and other drilling personnel will be provided and include self-contained mobile modular buildings that require no foundation or construction (see Figure 10 in Exhibit “D”). The modular buildings will be located directly on the well pad and will be removed once drilling is complete. Approximately 30 workers could live in the on-site accommodations and will not be allowed to leave the project area during drilling. Without on-site accommodations, peak traffic estimates would include an additional 30 light vehicles per day. Noble will obtain all required temporary housing permits from the State of Nevada.

**Table 2  
Estimated Peak Construction and Operations Workforces**

Workforce Category	Peak Number of Workers
<b>Construction</b>	
Well Pad and Road Construction	7
Drilling <sup>1</sup>	48
Completion <sup>2</sup>	50
Water Truck Drivers <sup>3</sup>	11
Dust Control <sup>4</sup>	1
Interim Reclamation	2
<b>Total Peak Construction Workforce<sup>5</sup></b>	<b>119</b>
<b>Operations</b>	
Pumper	1
Maintenance Worker	1
Water Truck Drivers <sup>6</sup>	2
Oil Truck Drivers <sup>7</sup>	19
Produced Water Truck Drivers <sup>8</sup>	15
<b>Total Peak Operations Workforce</b>	<b>38</b>
<sup>1</sup> Assumes two drilling rigs in operation with two seven-man drilling crews per rig. Additional drilling personnel include wellside consultants, mudloggers, mud engineers, solids control, directional driller, MWD, and active system aeration. <sup>2</sup> Assumes one completion rig with 50 workers during hydraulic fracturing. <sup>3</sup> Assumes water to drill one vertical well and one directional well and complete one horizontal well is hauled from on-site water wells in 100 barrel capacity tanker trucks. <sup>4</sup> Assumes 80 barrels of water per mile are sprayed from 100 barrel capacity trucks. <sup>5</sup> Assumes that facilities construction (10 workers) and water well drilling (4 workers) are complete before peak drilling and completion activities occur. <sup>6</sup> Assumes that water for dust control is applied to all unpaved roads in the project area. <sup>7</sup> Assumes oil production of 250 barrels per day per well from 12 wells and 100 barrels per day from 8 wells is transported in 200 barrel trucks. <sup>8</sup> Assumes 100 barrels of produced water per day from wells producing 250 barrels of oil per day and 40 barrels of produced water per day from wells producing 100 barrels of oil per day are transported by truck to Clean Harbors in Utah. As few as 4 drivers could be required if produced water is disposed in an on-site injection well.	

## BMPs for Erosion and Sediment Control

BMPs for sediment and erosion control will be accomplished through a combination of construction techniques, vegetation and re-vegetation, and structural features. Construction of a well pad requires the removal of vegetative cover and topsoil that increases peak flood flows, water velocity, and the volume of stormwater runoff. An increase in water runoff volume and velocity results in increased erosion. Erosion reduction and control will be accomplished by using the following erosion control methods. These methods include but are not limited to:

- Diversion and control of runoff water;
- Vegetation planting and maintenance;
- Application and maintenance of mulches, blankets, tackifiers, tracking and contouring; and
- Proper grading techniques.

Runoff control procedures that will be used to mitigate and reduce the erosive transport forces of stormwater during and after construction of a pad will include but will not be limited to the following:

- Check dams;
- Earth berms;
- Culvert protection;
- Diversion ditches;
- Slope drains;
- Rock lined ditch;
- Mulches, with or without a tackifier;
- Geotextiles; and
- Erosion Control Blanket/Turf Reinforcement Matting.

The control and reduction of sediment contained in stormwater runoff will be accomplished by the use of sediment containment systems. Sediment containment systems are hydraulic controls that allow the deposition of suspended particles by gravity. Sediment controls that will be used to mitigate and control sediments generated from the erosive transport forces of stormwater during and after construction of a pad will include but will not be limited to the following:

- Silt Fence;
- Straw Bale Dikes/Traps;
- Straw Wattles;
- Sediment Traps/Basins;
- Vehicle Tracking Pads;
- Continuous Berms;
- Continuous Berms with Rock Filter, and
- Slash Berm.

## Hydraulic Fracturing

Noble will comply with BLM's proposed rule to regulate hydraulic fracturing on public and Indian land. The proposed rule provides for public disclosure of chemicals used in hydraulic fracturing on public and Indian land, strengthen regulations related to well-bore integrity, and addresses issues related to flowback water. The rule has been proposed to provide useful information to the public and to assure that hydraulic fracturing is conducted in a way that adequately protects the environment.

Noble will participate in FracFocus which is a national hydraulic fracturing chemical registry. It is managed by the Ground Water Protection Council and Interstate Oil and Gas Compact Commission, two organizations whose missions both revolve around conservation and environmental protection. The primary purpose of the registry is to provide factual information concerning hydraulic fracturing and groundwater protection.

## Drilling and Completion Fluid Additives

Drilling and completion fluids are custom-engineered to accomplish various objectives, including:

- Cooling of the bit;
- Suspension of rock cuttings so they can be circulated out of the boring as it is drilled;
- Maintaining fluid pressure on intercepted formations to control formation fluids;
- Pressuring the formation in open hole sections or through casing perforations to generate rock fractures, opening up the connection of formation to the well;
- Carrying "proppant" particulates, sand, ceramic or plastic, to prop fractures open when the pressure is released, and small rubber balls to block perforations and hold injected fluids outside the casing for a short time; and
- Carrying other chemicals to "break" the gel suspending the proppant, disinfect the hydraulically fractured zone and retard microbial growth which can sour the well, and flush general chemical residuals.

Drilling is typically performed with a bentonite mud base, with various viscosity and density-adjusters (such as polymers and barite). Drilling mud will be entirely contained in ("pitless") tanks at the surface, and fluid and cuttings will be segregated for re-use and disposal. Drilling mud will be displaced from the boring by each separate casing cementing.

Table 3 provides a tentative list of materials that may be used as completion fluid additives. Option 3 in the table may be used later in exploration if directional wells are drilled. Note that the list of materials does not contain diesel, which was common in fracturing fluids 10 years ago. The only constituent not fully disclosed is a proprietary amine polymer formulation ("KCl substitute") added in small quantities to augment clay stabilization. All of these constituents are either consumed in the treatment (acid, pH buffers), inert (sand), or biodegradable. Biocide retards microbes which would otherwise grow rapidly in the guar starch, until such time as the fluid can be produced in "flowback" water or displaced and plugged off in a well that is abandoned.

**Table 3  
Tentative List of Materials for Nevada Stimulations**

<b>Material</b>	<b>Volume</b>	<b>Description</b>	<b>Purpose</b>	<b>Fate</b>
<b>Option #1: Cross-Linked Gel Sand Frac for Vertical Wells: 5 Stages of 150,000 lbs.</b>				
Water	425,000 gal.	Fresh Water	Fluid basis	Flowback
Sand	35,000 lbs.	100 mesh	Very fine proppant	Inert
Sand	750,000 lbs.	Premium White Sand	Proppant	Inert
Labeled ceramic		Radioactive tracer	Ceramic proppant with trace radioactivity	Low radioactivity
LGC	5 gal/1000g	Liquid Gel Concentrate	Guar (legume) starch	Biodegradable
Breaker	2.5 gal/1000g	Gel Breaker	Encapsulated ammonium persulfate oxidizer	Chemically degradable
HCl	1000 gal.	15% Hydrochloric Acid	Muriatic acid, cleaner and breaker	Neutralized by rock
Corrosion inhibitor	0.5 gal/1000g	In acid solution only	Retards acid attack on steel	Adheres to steel
Citric Acid	50 lbs/1000g	In acid solution only	Sequesters dissolved iron and prevents rust coat	Biodegradable
Ball Sealers	1000 ea.	5/8" diam rubber balls	After frack, plug perms and hold well pressure	Inert
KCl	2% in Water	Potassium Chloride	Formation clay stabilizer	Sorbed to borehole wall clay
"KCl Substitute"	1 gal/1000g	Proprietary polymer	Clay stabilizer	Biodegradable, and sorbed
Biocide	0.2 gal/1000g	Dibutyl normal propanamine	Disinfectant	Biodegradable
Cross Linker	2.25 gal/1000g	Borate X-linker with caustic	Forms gel in guar starch	Disperses at neutral pH
Buffer	0.5 gal/1000g	Formic Acid	Weak acid, pH regulator	Biodegradable
Non-emulsifier	1.0 gal/1000g		Soap	Flowback
<b>Option #2: Large Acid Job for Vertical Wells: Single Stage with Diversion</b>				
Water	13,000 gal.	Fresh Water	Fluid basis	Flowback
HCl	100,000 gal.	15% Hydrochloric Acid	Muriatic acid, cleaner and breaker	Neutralized by rock
Ball Sealers	1000 ea.	5/8" diam. RCN Ball Sealers	After fracturing, plug perms and hold well pressure	Inert
Citric Acid	50 lbs/1000g	Iron Sequestrant	Sequesters dissolved iron and prevents rust coat	Biodegradable
Surfactant	2 gal/1000g	Friction Reducer		
Demulsifier	1.0 gal/1000g			
Biocide	0.2 gal/1000g	Dibutyl normal propanamine	Disinfectant	Biodegradable
Corrosion inhibitor	0.5 gal/1000g		Retards acid attack on steel	Adheres to steel
KCl	2% in Water	Potassium Chloride	Formation clay stabilizer	Sorbed to bare hole wall clay
<b>Option #3*: Cross-Linked Gel Sand Frac for Directional Wells: 10 Stages of 150,000 lbs.</b>				
(Double all volumes of Option #1)				
(Large Acid Job Option not recommended for Directional Wells)				
*May be used later in exploration.				

**12. Lessee or Operator's Certification**

Noble Energy, Inc. hereby certifies that said company is authorized to conduct operations on the above-described land under the terms and conditions of Federal Oil and Gas Leases \_\_\_\_\_. Bond coverage, as required by 43 CFR 3104 is provided by Noble Oil, Inc. The applicable bond number is NV-\_\_\_\_\_, a statewide oil and gas lease bond in the amount of \$\_\_\_\_\_.

I hereby certify that I, or persons under my direct supervision, have inspected the area and are familiar with the general area of the proposed drill site locations and access roads; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct and that the work associated with the operations proposed herein will be performed by Noble Energy, Inc., its agents, contractors, and subcontractors in conformity with the plan and the terms and conditions under which it is approved.

Noble Energy, Inc.

Name: \_\_\_\_\_  
Kevin Vorhaben Date