

# ENCANA USA'S ENVIRONMENTAL STUDIES: NORTH PARACHUTE RANCH



## Our Commitment

Encana Oil & Gas (USA) Inc. (Encana USA) demonstrates its commitment to long-term environmental stewardship and community responsibility through its ongoing, voluntary studies conducted on the 45,000-acre North Parachute Ranch (NPR), located northwest of the town of Parachute, Colorado. On the NPR, Encana USA operates more than 650 producing wells with an estimated combined production of more than 200 million cubic feet of natural gas per day. Nearly all of the wells are directionally drilled from multi-well pads to reduce the environmental impact and minimize rig moves. Recently Encana USA was recognized by the COGCC as the outstanding operator in the state of Colorado for drilling and completions during 2010, due in large part to a single well pad on NPR that has 51 active wells drilled. Encana USA maintains a variety of third-party studies for environmental data collection and monitoring. The company believes in taking a proactive approach to environmental responsibility, looking for ways to minimize the footprint of its operations and to reclaim the natural vegetation and habitat in its operational areas.

## Water Resources

Encana USA's water quality monitoring program began in the fall of 2004. More than 750 water samples have been collected to establish baseline water quality and monitor water quality during construction of facilities and development of the natural gas resource. A total of 11 monitoring wells, 4 water wells, 21 surface water locations, and 26 springs are sampled quarterly through the year (depending on flow conditions). Samples are analyzed for a variety of compounds, including but not limited to:

- Benzene, toluene, MTBE, and methane
- Metals (like calcium, iron, lead, potassium, and sodium)
- Chloride, fluoride, sulfate, alkalinity, pH

Data collected through Spring 2011 indicates no noticeable impacts and no trends toward water quality changes.

To restrain pollutants and sediment from reaching ecologically sensitive areas, Encana USA manages storm water through facilities design and engineering controls. Encana USA has also identified and surveyed wetlands areas along the East, Middle and West Forks of Parachute Creek to assist in mitigating and avoiding impacts.

In addition to our efforts to monitor water quality and manage runoff from storm water, Encana USA also goes to great lengths to conserve water. Via an intricate buried pipeline network, Encana USA recycles and reuses over 95% of our produced water.

## Air Resources

To monitor air quality in the NPR, Encana USA has established a permanent, technologically advanced air-monitoring station approximately one mile southwest of the town of Rio Blanco. The air monitoring station collects real-time air quality data, including ozone, nitrogen dioxide, carbon monoxide and particulates, as well as wind speed, direction, temperature, and barometric pressure.

In an effort to protect our air quality, Encana USA's drilling rigs use the most advanced air emissions equipment available at the time the rig is built. Furthermore, Encana USA spent millions of dollars to design, build, and install an intricate buried pipeline network for water distribution and handling purposes. This water distribution system has saved roughly 100,000 truck transports per year – a huge benefit to air quality. Encana USA also constructed a buried 3-phase gathering pipeline system with central facilities that eliminates having tanks on every pad, thus eliminating emissions associated with those tanks.



## Biological Resources

Encana USA has undertaken a variety of studies to estimate existing habitat use by a variety of wildlife and the potential impact of natural gas development activities. Encana USA's wildlife database includes big game winter range, and the company has also mapped fawning/calving areas and set aside a critical migration corridor (including approximately 20 acres of Encana USA owned land). Additional biological studies performed in the NPR include baseline macro-invertebrate sampling to determine aquatic habitat and water quality in the forks of Parachute Creek, identification and mapping of the nesting habitat of raptors (hawks, owls, falcons, and eagles), as well as surveys for threatened and endangered plants. This information aids management in planning future development.

In conjunction with the Colorado Division of Wildlife (CDOW), and the Bureau of Land Management (BLM) Encana USA participates in the local sage grouse conservation planning group and has funded studies of the sage grouse to gauge population levels and examine the dynamics of this population. Encana USA is actively committed to using the latest available research on sage grouse to mitigate the impacts of drilling.

Encana USA believes in taking a collaborative approach to protecting wildlife. The company has committed nearly \$2 million in support of environmental projects in the NPR and adjacent landscapes, including providing funding and access to its private lands in support of the Colorado Division of Wildlife's Mitigation Research Projects Proposal, which focuses on greater sage grouse studies, wildlife-oriented reclamation, and mule deer population studies.

Encana USA is a partner of Operation Game Thief (OGT), a program that pays rewards to citizens who turn in poachers. The Company provides funding for the rewards and posts educational information and phone numbers for OGT on worksite bulletin boards. Encana USA has also hosted multiple turkey and elk hunts for women and youth on the NPR for CDOW's Hunter Outreach Program.

In 2009, Encana USA and the Colorado Division of Wildlife signed the North Parachute Ranch Wildlife Mitigation Plan. This proactive agreement incorporates many of the programs, documents, and practices Encana USA has implemented on the NPR since 2005. The plan allows flexibility for energy development while taking into account the variety of sensitive species and habitats found on NPR.

This endeavor not only reduces the time required by each party to permit individual projects, it provides for more effective mitigation design at a landscape-scale and has provided key tools and guidance for operators dedicated to incorporating wildlife mitigation into project planning. Since this unique mitigation plan focuses on Encana USA's private property, Encana USA's outstanding commitment to stewardship remains voluntary.

## Grazing and Rangeland Resources

Encana USA continues the grazing tradition on NPR in cooperation with neighboring ranchers. Grazing leases are monitored to maintain healthy landscapes for both livestock and wildlife utilization. Encana USA has also developed an area-wide Reclamation Guidance document to provide direction on appropriate seed mixes, reclamation techniques, weed control measures, and monitoring protocols to document success on the NPR.

## Voluntary Onsite Surveys

Voluntary onsite surveys are conducted prior to new construction to identify, avoid and/or mitigate potential environmental issues. These surveys include threatened and endangered species, raptors, species of conservation concern (including great sage grouse), deer and elk use, cultural resources, water quality, re-vegetation potential, existing weed populations, erosive soils, and slope stability.

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