

U.S. Department of the Interior
Bureau of Land Management
Glenwood Springs Energy Office
2425 South Grand Avenue, Suite 101
Glenwood Springs, Colorado 81601

ENVIRONMENTAL ASSESSMENT

NUMBER: CO140-2007-055 EA

CASEFILE NUMBER: Federal Lease COC60434 (Bottomhole)

PROJECT NAME: Proposal to Directional Drill 1 Federal Well from a Proposed Private Surface Location (J14OU) in the Wallace Creek Area.

LEGAL DESCRIPTION: NW $\frac{1}{4}$ SE $\frac{1}{4}$, Section 14, Township 8 South, Range 96 West, 6th Principal Meridian

Table 1. Surface and Bottomhole Locations of Proposed Federal Well.		
<i>Proposed Well</i>	<i>Surface Location (Sec. 14, T8S, R96W)</i>	<i>Bottomhole Location (Sec. 14, T8S, R96W)</i>
Knox Federal 14-15	NWSE, 1947 feet FSL, 1795 feet FEL	SWSE , 660 feet FSL, 1980 feet FEL

APPLICANT: EnCana Oil & Gas (USA) Inc. (“EnCana”)

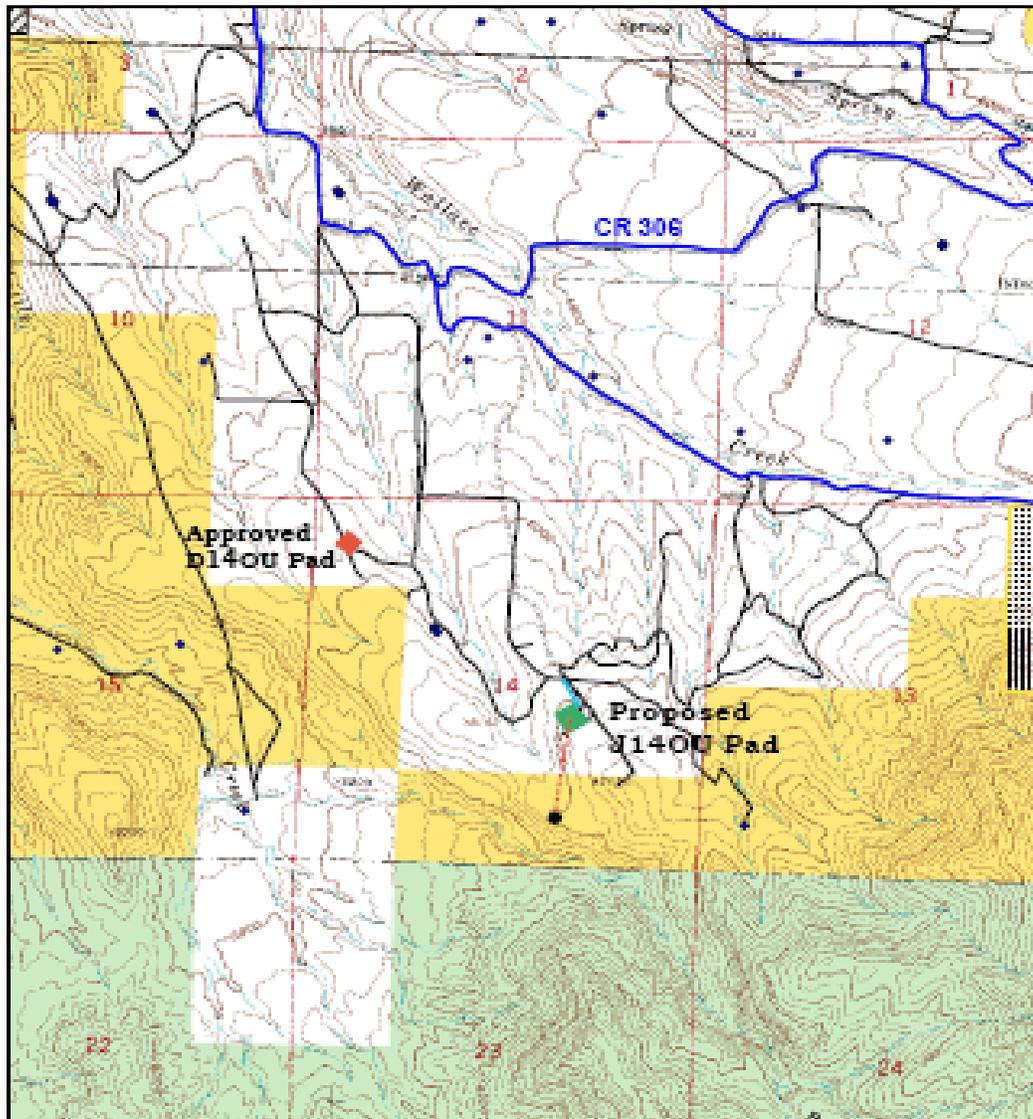
DESCRIPTION OF PROPOSED ACTION AND NO ACTION ALTERNATIVE:

Proposed Action: The proposed action is to drill and develop one Federal well from a proposed private surface and mineral estate location in the Wallace Creek area (Figure 1). This well would be directionally drilled from this location to adjacent Federal mineral estate. The operator also plans to drill one well into underlying fee mineral lease under a state permit.

The proposed J14OU well pad, access road, and pipeline would be situated in pinyon-juniper woodlands on north-facing mesa slopes. Maximum cut proposed for the pad would be 15.5 feet at its southern edge, with a maximum proposed fill of 16.75 feet at its northern edge. The construction of the well pad would result in approximately 3.6 acres of new surface disturbance which would be reduced to approximately 1.5 acres after interim reclamation.

To accommodate access to the proposed pad, approximately 570 feet of existing 2-track road would be improved. The road would be reconstructed to standards described in *Surface Operating Standards for Oil and Gas Exploration & Development* (USDI and USDA 2006), which would include widening the running surface to 16-20 feet.

A maximum 6-inch diameter gas pipeline would be buried in a trench alongside the upgraded access road. The road and adjacent pipeline would be constructed within a 75-foot disturbance corridor, all of which would be on private land. The pipeline would connect to an existing EnCana gathering line buried along the access road.



EnCana's Proposed J14OU Pad with 1 Fed Well
T8S R96W Sec 14, NWSE 6th P.M. (J14OU Pad)
 Mesa County, CO

Surface Owners: Larry & Danna Knox

Proposed Pad: Green Block
 Proposed Pipeline: Light Blue Line


 Scale 1: 24,000
 1/2400'

Figure 1. Location of the Proposed Action.

Construction of the road and pipeline would result in approximately 1.0 acre of new surface disturbance. Total surface disturbance on private land would be approximately 4.6 acres. The public would not have motorized access to the area as the existing road system traverses through a private subdivision.

The proposed action would include well drilling and completion operations, installation of production facilities, production of natural gas, and intermediate and final reclamation measures. The Application for Permit to Drill (APD) includes a drilling program and a multi-point surface use and operations plan that describe details of well pad construction and interim reclamation. The proposed action would be implemented consistent with the terms of Federal Lease COC60434, and with Conditions of Approval (COA) attached to the APD (Appendix A).

No Action Alternative: The proposed action involves Federal subsurface minerals that are encumbered with Federal oil and gas leases, which grants the lessee a right to explore and develop the lease. Although BLM cannot deny the right to drill and develop the leasehold, individual APD(s) can be denied to prevent unnecessary and undue degradation. The no action alternative constitutes denial of the APD associated with the proposed action and the Federal well would not be developed.

Under this alternative, however, the access road would be improved, the pad would be constructed, the pipeline would be installed, and one private well would be developed. These elements of the proposed action would not require Federal approval since they are associated with the development of private mineral estate from a private surface location. The developments would be permitted by the Colorado Oil and Gas Conservation Commission (COGCC) and would be subject to state regulatory authority.

PURPOSE AND NEED FOR THE ACTION: The purpose of the action is to develop oil and gas resources on Federal Lease COC60434 consistent with existing Federal lease rights. The action is needed to increase the development of oil and gas resources for commercial marketing to the public.

SUMMARY OF LEASE STIPULATIONS: The proposed developments would occur on private lands and would involve directionally drilling from a private surface and mineral estate location into adjacent Federal mineral estate. Lease stipulations are not applicable in this circumstance because no surface developments would occur within the legal boundaries of Federal Lease COC60434.

PLAN CONFORMANCE REVIEW: The proposed action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: Glenwood Springs Resource Management Plan (BLM 1984).

Date Approved: Amended in November 1991 – Oil and Gas Leasing and Development – Final Supplemental Environmental Impact Statement; amended in March 1999 – Oil and Gas Leasing & Development Final Supplemental Environmental Impact Statement.

Decision Number/Page: Record of Decision, Glenwood Springs Resource Management Plan Amendment, November 1991, page 3.

Decision Language: “697,720 acres of BLM-administrated mineral estate within the Glenwood Springs Resource Area are open to oil and gas leasing and development, subject to lease terms and (as applicable) lease stipulations.” This decision was carried forward unchanged in the 1999 RMP amendment (BLM 1999b).

Discussion: The proposed action is in conformance with the 1991 and 1999 Oil and Gas RMP amendments because the Federal mineral estate proposed for development is open for oil and gas leasing and development.

STANDARDS FOR PUBLIC LAND HEALTH: In January 1997, Colorado BLM approved the Standards for Public Land Health. The five standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. The environmental analysis must address whether the proposed action or alternatives being analyzed would result in impacts that would maintain, improve, or deteriorate land health conditions relative to these resources.

These analyses are conducted in relation to baseline conditions described in land health assessments (LHAs) completed by the BLM. The proposed action would be located in an area that was included in the Battlement Mesa LHA (BLM 2000).

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides a description of the human and natural environmental resources that could be affected by the proposed action and no action alternative. In addition, the section presents comparative analyses of the direct and indirect consequences on the affected environment stemming from the implementation of the various actions.

A variety of laws, regulations, and policy directives mandate the evaluation of the effects of a proposed action and alternative(s) on certain critical environmental elements. Not all of the critical elements that require inclusion in this EA are present, or if they are present, may not be affected by the proposed action and alternative (Table 2). Only those mandatory critical elements that are present and affected are described in the following narrative.

In addition to the mandatory critical elements, there are additional resources that would be impacted by the proposed action and alternative. These are presented under **Other Affected Resources**.

Critical Elements

Air Quality

Affected Environment: The proposed action area (Mesa County) has been described as an attainment area under CAAQS and NAAQS (Colorado Ambient Air Quality Standards and National Ambient Air Quality Standards). An attainment area is an area where ambient air pollution amounts are determined to be below NAAQS standards.

Table 2. Critical Elements of the Human Environment.									
<i>Critical Element</i>	<i>Present</i>		<i>Affected</i>		<i>Critical Element</i>	<i>Present</i>		<i>Affected</i>	
	Yes	No	Yes	No		Yes	No	Yes	No
Air Quality	X		X		Prime or Unique Farmlands		X		X
ACECs		X		X	Special Status Species*	X		X	
Cultural Resources	X		X		Wastes, Hazardous or Solid	X		X	
Environmental Justice	X			X	Water Quality, Surface and Ground*	X			X
Floodplains		X		X	Wetlands and Riparian Zones*		X		X
Invasive, Non-native Species	X		X		Wild and Scenic Rivers		X		X

Migratory Birds	X		X		Wilderness/WSAs		X		X
Native American Religious Concerns	X		X						

* Public Land Health Standard

Proposed Action:

Environmental Consequences: The Roan Plateau RMPA and EIS describes potential effects from oil and gas development (BLM 2006:4-26 to 4-37). Analysis was completed with regard to greenhouse gas emissions, a near-field and far-field analysis for carbon monoxide, particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide, hazardous air pollutants including: benzene, ethylbenzene, formaldehyde, hydrogen sulfide, toluene, and xylenes. Sulfur and nitrogen deposition, acid neutralizing capacity, and screening-level visibility analyses were also completed in the Roan Plateau RMPA and EIS. Findings indicate that no adverse long-term effects would result under that plan. Since the proposed action is within the scope of the reasonable foreseeable development (RFD) scenario analyzed in that document, it is anticipated that the proposed action would be unlikely to have adverse effects on air quality.

Activities described in the proposed action would result in localized short-term increases in vehicle and equipment emissions. Concentrations of emissions would be below applicable ambient air quality standards as analyzed in the Roan Plateau RMPA & EIS. However, it is anticipated that construction and production activities would likely produce high levels of dust in dry conditions without dust abatement. To mitigate dust generated by these activities, the operator would be required to implement dust abatement strategies as needed by watering the access road and construction areas and/or by applying a surfactant approved by the Authorized Officer (Appendix A, Number 2).

No Action Alternative:

Environmental Consequences: The no action alternative would result in slightly reduced emissions relative to the proposed action because one well would be developed instead of two.

Cultural Resources

Affected Environment: A Class I study (GSFO# 5407-11) and a Class III inventory (GSFO#5407-19) were conducted for the proposed well pad, access road, and pipeline. A Class I study was required since access to conduct a Class III inventory was denied by the land owner. Denial to conduct a Class III inventory is not considered a “routine undertaking” under the Colorado Protocol (1998) of the National BLM/State Historic Preservation Office (SHPO) Programmatic Agreement (1997).

The results of the Class I study indicated that the proposed action could “adversely affect historic properties”. As such, formal consultation with the SHPO on the Class I results was initiated on March 2, 2007. The State Historic Preservation Officer concurred with this determination on March 12, 2007 and indicated that a Class III inventory would be required. The Class III inventory was conducted once land owner permission was obtained and weather conditions permitted. No cultural resources were identified that are eligible for listing on the National Register of Historic Places. Therefore, no formal consultation with the Colorado SHPO on the Class III inventory results was necessary and a determination of “**No Historic Properties Affected**” was made in accordance with the National Historic Preservation Act (16U.S.C 470f), National BLM/SHPO Programmatic Agreement (1997), and Colorado Protocol (1998).

Proposed Action:

Environmental Consequences: Although the proposed action would have no direct impacts on cultural resources, indirect long-term cumulative impacts from increased access and the presence of project personnel could result in a range of impacts to known and undiscovered cultural resources in the vicinity of the location. These impacts could range from illegal collection and excavation to vandalism.

A standard Education/Discovery Condition of Approval (COA) for cultural resource protection would be attached to the APDs (Appendix A, Number 3). The importance of this COA should be stressed to the operator and its contractors, including informing them of their responsibilities to protect and report any cultural resources encountered on public land during construction, drilling, and development operations.

No Action Alternative:

Environmental Consequences: Under this alternative, the private well would be developed and the associated pad, access road, and pipeline would be constructed. As such, this alternative would have the same potential impacts as the proposed action. The Education/Discovery COA designed to protect cultural resources would not be included in the permit issued by COGCC, however the Colorado State Statute CRS 24-80-1301 would apply.

Invasive, Non-native Species

Affected Environment: The pad and road would lie within pinyon-juniper (*Pinus edulis-Juniperus osteosperma*) woodland. Cheatgrass (*Bromus tectorum*) is a dominant component in the herbaceous layer. No other invasive or noxious weeds are present.

Proposed Action:

Environmental Consequences: Surface-disturbing activities create conditions favorable for the invasion and establishment of noxious weeds and other invasive non-native species, particularly when these species are already present in the surrounding area. Since cheatgrass is present in the vicinity of the proposed pad and access road, the potential for invasion following construction is high. Mitigation measures designed to minimize the spread of invasive, non-native species are presented in Appendix A (Number 4).

No Action Alternative:

Environmental Consequences: The no action alternative would result in the same amount of surface disturbance (e.g., 4.6 acres) as the proposed action. The operator would not be subject to BLM noxious and invasive weed standards, but would be subject to COGCC regulations. With adherence to these regulations, it is anticipated that the effects of the no action alternative would be similar to the proposed action.

Migratory Birds

Affected Environment: The project area provides cover, forage, and nesting habitat for a variety of migratory birds. A few species found on the U.S. Fish and Wildlife Service's Birds of Conservation Concern (USFWS 2002) may be present. These species are the pinyon jay (*Gymnorhinus cyanocephalus*), gray vireo (*Vireo vicinior*), black-throated gray warbler (*Dendroica nigrescens*), and Virginia's warbler (*Vermivora virginiae*). Other species that are not on the BCC list but associated primarily with this habitat type include year-round residents such as the juniper titmouse (*Baeolophus griseus*) and Townsend's solitaire (*Myadestes townsendi*) and migrants such as the blue-gray gnatcatcher

(Poliophtila caerulea). Although no birds of prey (raptors) are known to nest in the project area, the pinyon/juniper habitat provides perching, foraging, and potential nesting sites for several species, including one species on the BCC list, Swainson's hawk (*Buteo swainsoni*).

No raptor nests are known to occur in the immediate vicinity of the proposed well pad, road, or pipeline. However, golden eagles and red-tailed hawks are known to nest in the vicinity. It is likely that these and other raptors forage in the area where the new well pad, road, and pipeline facilities would be developed. Other raptors potentially using the pinyon-juniper habitat for perching or nesting include the Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*A. striatus*), red-tailed hawk (*Buteo jamaicensis*), and two small owls, the western screech-owl (*Otus kennicottii*) and northern pygmy-owl (*Glaucidium gnoma*). Another species that would not be expected to nest onsite but could visit the area in search of prey is the golden eagle (*Aquila chrysaetos*); this species is on the BCC list and protected by the Bald and Golden Eagle Protection Act. All of the raptors and other species listed above are protected by the Migratory Bird Treaty Act.

Proposed Action:

Environmental Consequences: The proposed action would result in a direct loss of 4.6 acres of nesting, breeding, roosting, perching, and foraging habitat for migratory birds. Individual birds would be impacted where trees, shrubs, and understory vegetation is removed to accommodate natural gas infrastructure. It is possible that individual nests could be destroyed if the well pad and road are constructed during the spring nesting season. In addition, currently intact habitats would be fragmented. This fragmentation would result in reduced habitat patch size which negatively impacts bird species that require large expanses of intact habitat.

In addition to the physical loss of habitat and fragmentation, it is likely that during all construction activities, individual birds would be displaced to adjacent habitats due to noise and human activity. Despite the impacts to individual birds, it is unlikely that birds would be impacted at the species or population level. Raptors should not be negatively affected as upland foraging habitat is plentiful in the area.

The development of a reserve pit on the proposed pad may be expected to attract waterfowl and other migratory birds for the purposes of resting, foraging, or as a source of free water. The extent and nature of the problem is not well-defined, but management measures should be aimed at preventing bird contact with produced water and drilling and completion fluids that may pose a problem (e.g., acute or chronic toxicity, compromised insulation). Mitigation measures designed to limit access to reserve pits are presented Appendix A (Number 5).

In order to protect nesting raptors, a raptor survey would be conducted prior to any new construction, drilling, or completion activities scheduled between February 1 and August 15 (Appendix A, Number 6).

No Action Alternative:

Environmental Consequences: Because most of the developments would occur, the no action alternative would result in similar impacts to those identified in the proposed action.

Native American Religious Concerns

Affected Environment: The Ute Tribes claim the area as part of their ancestral homeland. At present, no Native American concerns are known within the project area, and none were identified during the inventory. Therefore, consultation with the Ute Tribes was not initiated. If new data are disclosed by the Ute Tribes, new terms and conditions may have to be negotiated to accommodate their concerns.

Proposed Action:

Environmental Consequences: Increased access and the presence of project personnel could result in a range of impacts to known and undiscovered Native American resources in the vicinity of the proposed action. These could range from illegal collection to vandalism. A standard Education/Discovery COA for protection of resources of Native American concern would be attached to the APDs (Appendix A, Number 3). The importance of this COA should be stressed to operator and its contractors, including informing them of their responsibilities to protect and report resources of Native American concern encountered during development operations.

No Action Alternative:

Environmental Consequences: Impacts from the no action alternative would be similar to the proposed action. The Education/Discovery COA designed to protect Native American resources would not be included in the permit issued by COGCC for the fee well, however the Colorado State Statute CRS 24-80-1301 would apply.

Special Status Species (includes an analysis of Public Land Health Standard 4)

Affected Environment: According to the latest species list from the U. S. Fish and Wildlife Service (<http://mountain-prairie.fws.gov/endspp/CountyLists/COLORADO.htm>), the following Federally listed, proposed, or candidate plant and animal species may occur within or be impacted by actions occurring in Mesa Counties: Uinta Basin hookless cactus (*Sclerocactus glaucus*), Parachute beardtongue (*Penstemon debilis*), DeBeque phacelia (*Phacelia submutica*), Canada lynx (*Lynx canadensis*), bald eagle (*Haliaeetus leucocephalus*), Mexican spotted owl (*Strix occidentalis*), yellow-billed cuckoo (*Coccyzus americanus*), razorback sucker (*Xyrauchen texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), bonytail chub (*Gila elegans*), and humpback chub (*Gila cypha*).

Habitat for Federally listed, proposed, or candidate animal species does not occur within or adjacent to the project area. Designated Critical Habitat for the Colorado pikeminnow and razorback sucker is located within the Colorado River and its 100-year floodplain approximately 3.5 miles from the project area. Critical habitat for the humpback chub and bonytail chub begins at Ruby Canyon near the Utah/Colorado state line, approximately 60 river miles from the project area.

BLM sensitive plant and animal species with habitat and/or occurrence records in the area include adobe thistle (*Cirsium perplexans*), DeBeque milkvetch (*Astragalus debequaeus*), Naturita milkvetch (*Astragalus naturitensis*), Roan Cliffs blazing star (*Mentzelia rhizomata*), Piceance bladderpod (*Lesquerella parviflora*), Harrington's penstemon (*Penstemon harringtonii*), milk snake (*Lampropeltis triangulum taylori*), midget faded rattlesnake (*Crotalus viridis concolor*), Great Basin spadefoot (*Spea intermontana*), flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*Catostomus discobolus*), and Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*).

A population of Colorado River cutthroat trout inhabits Wallace Creek approximately 2 miles east of the project area.

Proposed Action:

Environmental Consequences:

Federally Listed, Proposed, or Candidate Plant Species

There are no Federally listed, proposed or candidate plant species or suitable habitat for these species in the project area; therefore, the proposed action would have “**No Effect**” on these species.

BLM Sensitive Plant Species

Harrington’s penstemon, a BLM sensitive plant, occurs in open pinyon-juniper woodland on rocky loam or rocky clay loam soils between the elevations of 6,500 to 9,200 feet. However, the elevation of project area (approximately 6,200 feet) is too low, and the pinyon-juniper is too dense, to provide suitable habitat for Harrington’s penstemon. Therefore, this species does not occur in the project area, and it would not be impacted by the proposed thinning activities. There is no potential habitat for any other sensitive plant species in the project area.

Federally Listed, Proposed, or Candidate Animal Species

Construction activities would increase the potential for soil erosion and sedimentation. Although a minor, temporary increase in sediment transport to the Colorado River may occur, it is not likely that the increase would be detectable above current background levels. In any case, all of the federally listed, proposed, or candidate fish species associated the Colorado River are adapted to naturally high sediment loads. Therefore, the proposed action would have “**No Effect**” on these species.

BLM Sensitive Animal Species

Milk Snake, Midget Faded Rattlesnake, and Great Basin Spadefoot – Direct effects on these species could include injury or mortality as a result of construction, production, and maintenance activities. These effects would be most likely during the active season for these species, which are April to October for the milk snake, March to October for the midget faded rattlesnake, and May through September for the Great Basin spadefoot. Indirect effects for the two snake species could include a greater susceptibility to predation if the road or pad is used for temperature regulation. The potential for injury or mortality as a result of vehicles traveling on new roads and pads would increase for individuals of all three species. However, the potential for effects is low and impacts at the population level are not expected.

Flannelmouth Sucker, Bluehead Sucker, and Roundtail Chub – Although minor temporary increases in sedimentation may occur, they are unlikely to be detectable above background levels. For this reason, and because the flannelmouth sucker, bluehead sucker, and roundtail chub are adapted to high sediment loads, the proposed action would not be expected to adversely effect these species. Mitigation measures presented in Appendix A (Numbers 7-11) would be implemented to minimize sedimentation of the Colorado River and tributary streams

Colorado River Cutthroat Trout –Potential increase in sediment as a result of the project would occur below the elevation at which Wallace Creek becomes fish-bearing. Therefore, no impacts to Colorado River cutthroat trout are expected. Individual trout using the Colorado River would not be expected to be adversely affected as only minor temporary increases in sediment are expected that are unlikely to be detectable above background levels.

No Action Alternative:

Environmental Consequences: Impacts from the no action alternative would be similar to the proposed action because the amount of surface disturbance and the potential for sedimentation would be the same.

Analysis on the Public Land Health Standard for Special Status Species: Habitat conditions in 2001 within the Battlement Mesa landscape area appeared suitable for those special status species which are known or likely to occur there. Site-specific areas were achieving Standard 3 at three of the four sites surveyed in the Battlement Creek Common allotment where this project is located. The majority of the sites are located in old pinyon-juniper burn areas. As a result, good plant diversity and productivity were present. Perennial grasses and forbs were common and cheatgrass was less abundant in the landscape. The landscape appeared to be providing enough quality habitats to sustain the limited number of special status species with potential habitat occurring in the area.

The proposed action would facilitate increased natural gas development which would further fragment habitat, reduce habitat connectivity, and reduce habitat patch size within the Battlement Mesa landscape. When considered together with natural gas development that occurred since the initial assessment, the proposed action would likely contribute to a declining trend on the landscape and help to reduce the potential for meeting or maintaining Standard 4 for certain special status species over the long term.

It is also likely that the no action alternative would contribute to the declining trend since that amount of ground disturbance, and hence, the amount of habitat fragmentation and reductions in habitat connectivity and habitat patch size would be the same.

Since potential habitat for special status plant species is not present in the project area and no offsite or indirect impacts are anticipated, the proposed action and no action alternative should have no effect on these species. The proposed action and no action alternative should not result in a failure of the area to achieve Standard 4 for special status plants.

Wastes, Hazardous or Solid

Affected Environment: Hazardous materials are defined by the BLM as 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 USC 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any “hazardous waste” as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, 42 USC 9601 et seq., and its regulations. 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 USC 9601 (14), nor does the term include natural gas. No hazardous or solid wastes are known to be present in the project area, and no hazardous materials are known to have been used, stored, or disposed onsite. .

Proposed Action:

Environmental Consequences: A variety of materials, including lubricants, treatment chemicals, gasoline, oil, and diesel fuel, would be used in the development activities. Potentially harmful substances used in the construction and operation would be kept onsite in limited quantities and trucked to and from the site as required.

Most waste generated would be exempt from hazardous waste regulations under the exploration and production exemption of the RCRA (a list of nonexempt wastes is presented in Appendix B). Examples of exempt wastes include process water and soils contaminated with hydrocarbons. No hazardous substance, as defined by 40 CFR 355 would be used, produced, stored, transported, or disposed in amounts above the threshold quantities.

No Action Alternative:

Environmental Consequences: Impacts from the no action alternative would be the same as the proposed action.

Water Quality, Surface and Ground (includes an analysis of Land Health Standard 5)

Surface Water

Affected Environment: The developments would occur within the 14,474-acre Wallace Creek sub-watershed and would be located approximately 800 feet east of an unnamed ephemeral drainage that is tributary to Wallace Creek. Wallace Creek is an ephemeral drainage that joins the Colorado River northwest of the project area and southwest of the town of Parachute.

The unnamed ephemeral drainage is not listed on the State of Colorado's *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission, Regulation No. 37) list, *303(d) List of Water Quality Limited Segments Requiring TMDLS* (CDPHE, Water Quality Control Commission, Regulation No. 93), or the *Monitoring and Evaluation List* (CDPHE, Water Quality Control Commission, Regulation No. 94).

Proposed Action:

Environmental Consequences: The construction of the proposed well pad, pipeline and access road would involve the removal of soil and vegetation resulting in an increase in erosion potential and offsite sedimentation. With measures to control runoff water in place, reestablishment of vegetation, and proper engineering of roads and well pads, the potential for sediment transport to the unnamed ephemeral drainage would be minimized. The mitigation measures presented in Appendix A (Numbers 7-11 and 13) would be implemented to protect surface water.

No Action Alternative:

Environmental Consequences: The no action alternative would result in similar surface disturbance impacts as those identified in the proposed action. Although the BLM would have no authority to prescribe and enforce mitigation measures, measures designed to minimize the potential for erosion and sedimentation would be mandated by the COGCC.

Waters of the US

Affected Environment: Section 404 of the Clean Water Act requires a Department of the Army permit from the US Army Corps of Engineers prior to discharging dredged or fill material into waters of the United States as defined by 33 CFR Part 328. A Corps permit is required for both permanent and temporary discharges into waters of the United States. Jurisdictional drainages occur within the Wallace Creek sub-watershed; however there are no jurisdictional drainages within the immediate project area.

Proposed Action:

Environmental Consequences: The proposed activities would not involve any jurisdictional drainage and would have no effect on Waters of the U.S.

No Action Alternative:

Environmental Consequences: The impacts of the no action alternative would be the same as the proposed action.

Groundwater

Affected Environment:

The surface formation is the Wasatch Formation. According to the COGCC database, the closest water well is 1,400 feet to the northwest of the proposed gas well. The water well is a domestic well with a TD of 480 feet and a water level of 430 feet. There is a well permit approximately 800 feet east of the proposed well which would be used to supply domestic water to Housetop Mountain Estates.

Environmental Consequences: With the use of proper construction practices, drilling practices, and best management practices, no significant adverse impact to groundwater aquifers and quality is anticipated to result from the proposed action. A geologic and engineering review was performed on the 10-point drilling plan with supporting information contained in the APD EnCana submitted for the Knox Federal 14-15 well, dated March, 2007. According to the plan, the surface casing would be set to ≈800 feet (Total Vertical Distance or TVD) which would protect all potentially useable water zones.

No Action Alternative:

Environmental Consequences: With adherence to COGCC regulations, impacts from the no action alternative would be similar to the proposed action.

Analysis on the Public Land Health Standard for water quality: The proposed action and no action alternative with associated mitigation would not likely prevent Standard 5 for water quality from being met.

OTHER AFFECTED RESOURCES

In addition to the critical elements, the resources presented in Table 3 were considered for impact analysis relative to the proposed action and no action alternative. Resources that would be affected by the proposed action and no action alternative are discussed below.

Access and Transportation

Affected Environment: Access to the project area would be from Interstate 70 (Exit 75) at Parachute. Gas field traffic generally accesses the area from the frontage road west of Parachute and Garfield County Road (CR) 300 at the Una Bridge. After crossing the Colorado River at the Una Bridge, CR300 and CR306 provide the primary haul route to the project area. From CR306, access to the proposed well pad originates on privately owned lands with no legal public access.

Proposed Action:

Environmental Consequences: The proposed action would result in a substantial, but short-term, increase in truck traffic. The largest increase would be during rig-up, drilling, and completion activities. Data indicate that approximately 1,160 truck trips over a 30-day period would be required to support the drilling and completion of each well (Table 4). Extended across the development of two wells, approximately 2,320 trips, primary by pick-ups and 6- and 10-wheeled trucks, would be required over a 60-day period.

Table 3. Other Resources Considered in the Analysis.			
<i>Resource</i>	<i>NA or Not Present</i>	<i>Present and Not Affected</i>	<i>Present and Affected</i>
Access and Transportation			X
Cadastral Survey	X		
Fire/Fuels Management		X	
Forest Management	X		
Geology and Minerals			X
Law Enforcement	X		
Paleontology			X
Noise			X
Range Management		X	
Recreation		X	
Socio-Economics		X	
Soils			X
Vegetation			X
Visual Resources			X
Wildlife, Aquatic			X
Wildlife, Terrestrial			X

Table 4. Traffic Associated with Drilling and Completion Activities.		
Vehicle Class	Number of trips per well	Percentage of total
16-wheel tractor trailers	88	7.6%
10-wheel trucks	216	18.6%
6-wheel trucks	452	39.0%
Pickup trucks	404	34.8%
Total	1,160	100.0%
BLM 2006 Note: trips by different vehicle types are not necessarily distributed evenly during the drilling process. Drilling and completion period is approximately 30 days.		

Once the wells are producing, the volume of traffic would increase dramatically. During the operations phase of the project, traffic would be limited to weekly visits to the well pad for inspection and maintenance. Each well may have to be recompleted once per year, requiring three to five truck trips per day for approximately seven days.

The public has no legal access to the area and public access would not be affected. Degradation of field development roads may occur due to heavy equipment travel and fugitive dust and noise would be created. The mitigation measures presented in Appendix A (Numbers 10 and 11) would be implemented to ensure adequate road construction and maintenance.

No Action Alternative:

Environmental Consequences: The no action alternative would also result in an increase in truck traffic. Approximately 1,160 truck trips over a 30-day period or approximately one-half the trips associated with the proposed action would be required to drill and complete the private well.

Geology and Minerals

Affected Environment: The project area is located within the Piceance Basin, southwest of the town of Parachute. The basin is asymmetrical and deepest along its east side near the White River Uplift, where more than 20,000 feet of sedimentary rocks are present. Surface exposures in the Piceance Basin are primarily sedimentary rocks from the Tertiary Period that include the Green River and Wasatch formations.

Mineral resources within the vicinity of the project area include oil and gas deposits, coal, and sand and gravel. There are several known hydrocarbon-producing marine sands located at the base of the Mesaverde Group, including the Cameo coal zone. Sand and gravel deposits are found in limited amounts in Quaternary alluvial deposits along stream valleys. The operator's proposed gas drilling program would target horizons within the Mesaverde Group.

Proposed Action:

Environmental Consequences: Implementation of the proposed action would result in natural gas and associated water being produced from the hydrocarbon-bearing sands within the Mesaverde Group. The amount of natural gas that may be potentially produced from the proposed wells cannot be estimated accurately. However, if the wells become productive, initial production rates would be expected to be highest during the first few years of production, then decline during the remainder of the wells' economic lives. Natural gas production from the proposed wells would contribute to the draining of hydrocarbon-bearing reservoirs within the Mesaverde Group in this area, an action that would be consistent with BLM objectives for mineral production.

Casing programs have been designed to specifically prevent hydrocarbon migration from gas-producing strata penetrated by the well bore during drilling, initial production and after completion of the well. Identification of potential fresh water bearing zones, aquifers, gas producing zones, and under- and over-pressured formations are incorporated into drilling scenarios for the proposed wells. Estimates of what depth these zones would be encountered are used to determine drilling fluids, fluid densities, surface casing depths, and production planning. The proposed casing and cementing program has been designed to protect and isolate all usable water zones, potentially productive zones, lost circulation zones, and abnormally high-pressure zones.

No Action Alternative:

Environmental Consequences: Impacts from the no action alternative would be similar to the proposed action. However, its implementation would contribute to the draining of hydrocarbon-bearing reservoirs to a lesser extent since one rather than two wells would be developed.

Noise

Affected Environment: The proposed developments would lie within a rural subdivision consisting of a series of 35-acre tracts. Noise levels at the site are presently created by traffic serving the wells in the Horsethief Creek (Orchard Unit) Field and drilling and completion activities in the immediate area.

Noise levels reported for various elements of oil and gas development are between 50 decibels (dB(A)) for the operation of typical compressor station to approximately 68 dB(A) for truck traffic and crane operation (Table 5). These levels are a function of distance; the closer to the source, the greater the noise.

Table 5. Noise Levels Associated with Oil and Gas Production and Development.		
<i>Source</i>	<i>Reported Noise Level</i>	<i>Where Measured</i>
Typical compressor station	50 dB(A)	375 feet from boundary
Pumping units	50 dB(A)	325 feet from well pad
Fuel and water trucks	68 dB(A)	500 feet from source
Crane for hoisting rigs	68 dB(A)	500 feet from source
Concrete pump used during drilling	62 dB(A)	500 feet from source
Average well construction site	65 dB(A)	500 feet from source
Source: La Plata County (2002)		

Proposed Action:

Environmental Consequences: Implementation of the proposed action would result in increased noise levels particularly during road and well pad construction, well drilling, and completion. Short-term (7 to 14 day) increases in noise levels would characterize road and well pad construction. Based on the Inverse Square Law of Noise Propagation (Harris 1991) and an average construction site noise level of 65 dB(A) at 500 feet, construction noise would equal approximately 59 dB(A) at 1,000 feet. At 1,000 feet, noise levels would approximately those of an active commercial area (EPA 1974).

Noise impacts from drilling and completion activities would last approximately 45 to 60 days at each well. Noise would occur continuously, 24-hours per day, during the drilling and completion period. Based on a measured noise level of 68 dB(A) at 500 feet, actions associated with drilling and completion would generate approximately 55 dB(A) at 1,000 feet. This level of noise approximates that associated with light industrial activities (EPA 1974).

These increased noise levels would be in addition to levels of noise that are already above background levels due to current oil and gas developments in the area. The increased levels of noise would likely be viewed in a negative light by nearby residents, although no health risks are anticipated.

Traffic noise levels would also be elevated as a consequence of the proposed action. The greatest increase would be along access roads during the drilling and completion phases. Based on the La Plata County data presented in Table 5, approximately 68 dB(A) of noise (at 500 feet) would be created by each fuel and water truck that travels these roads. Less noise would be created by smaller trucks and passenger vehicles such as pickup trucks and sport utility vehicles. Although the duration of increased noise from this source would be short, it would occur repeatedly during the drilling and completion phases. Traffic noise level would impact residences located along county roads that would provide primary access into the area. While exposure to these noise levels is not likely to be harmful either, it is likely to annoying to residents.

Noise impacts would decrease during the production phase. Pumping units and compressor noise levels would be approximately 50 dB(A) at 325 to 375 feet and continued small truck traffic would generate somewhat less. These levels would be less than the construction phase, but greater than background noise levels. During maintenance and workovers, noise would increase above noise levels associated with routine well production.

No Action Alternative:

Environmental Consequences: Although the source of noise and the level of noise increase would be similar to the proposed action, the duration would be shorter because one rather than two wells would be developed.

Paleontology

Affected Environment: The surficial formation in the project area is the Paleocene Wasatch Formation. It is classified as a Class 1 formation with areas known or likely to produce abundant scientifically important fossils, such as early horses, rare primates, rhinoceroses, birds, crocodiles, rodents, fish, turtles, fresh water clams, snails, and plants. These fossils are vulnerable to surface-disturbing activities.

A review of existing records indicates that there are no known paleontological sites located in the project area. It appears that the area has minimal to no outcropping and is covered in pinyon and juniper vegetation with generally poor ground visibility.

Proposed Action:

Environmental Consequences: Constructing a new access road, pipeline, and wellpad could result in the uncovering or destruction of paleontological resources. However, the potential for such impacts is low because there is no outcropping where fossil materials typically occur, and there is dense soil and vegetation cover across the project area. On this basis, a paleontological survey would not be required prior to BLM authorization of the APD. If any fossils are noticed at anytime, the Authorized Officer must be notified so the resource can be recorded, evaluated, stabilized, or mitigated. The standard paleontology condition of approval shall be applied to the APD (Appendix A, Number 12).

No Action Alternative:

Environmental Consequences: Impacts from the no action alternative would be similar to the proposed action.

Soils (includes an analysis of Public Land Health Standard 1)

Affected Environment: The soil map from the Soil Survey of Rifle Area, Colorado: Parts of Garfield and Mesa Counties (*USDA Soil Conservation Service, 1985*) indicates that the proposed well pad would be located on the soil map unit Ildefonso stony loam. This deep, well-drained soil is found on mesas, benches, and the sides of valleys at elevations ranging from 5,000 to 6,500 feet and on slopes of 6 to 25 percent. This soil is derived primarily from basalt and may contain a small amount of eolian material at the top of the unit. Surface runoff for this soil is medium and erosion hazard is moderate. Primary uses for this soil include grazing and wildlife habitat.

Proposed Action:

Environmental Consequences: Some soil loss, loss of soil productivity, and increase in sediment available for transport would result from construction activities. Due to the proximity of the proposed well pad to the unnamed ephemeral drainage to the west, mitigation measures would be implemented to minimize potential impacts associated with soil loss and transport (Appendix A, Numbers 7-11 and 13).

No Action Alternative:

Environmental Consequences: The no action alternative would result in similar surface disturbance impacts as those identified in the proposed action. Although the BLM would have no authority to prescribe and enforce mitigation measures, measures designed to minimize the potential for erosion and sedimentation would be mandated by the COGCC.

Analysis on the Public Land Health Standard for upland soils: The proposed action and no action alternative with associated mitigation would not likely prevent standard 1 from being achieved.

Vegetation (includes an analysis of Public Land Standard 3)

Affected Environment: The vegetation within the project area consists of pinyon-juniper and sagebrush (*Artemisia* spp.). Other dominant species include cheatgrass, snakeweed (*Gutierrezia sarothrae*), prickly pear (*Opuntia* spp.), Indian ricegrass (*Achnatherum hymenoides*), galleta grass (*Hilaria jamesii*), and grassy rock goldenrod (*Petradoria pumila*).

Proposed Action:

Environmental Consequences: The well pad, road, and pipeline would result in an estimated 4.6 acres of total surface disturbance on private land. With implementation of reclamation practices identified in the COAs (Appendix A, Number 13), establishment of desirable herbaceous vegetation on the unused portions of the pad, pipeline, and road could be restored within 2 to 3 years. The establishment of mature shrubs could take from 5 to 25 years, and the establishment of trees would take even longer; however, because of periodic workovers and the potential for additional well bores to be drilled from this pad, it is likely that vegetation would remain in an early seral stage for the life of the wells.

No Action Alternative:

Environmental Consequences: Impacts of the no action alternative would be similar to the proposed action. However, reclamation activities on private lands are not subject BLM standards. Therefore, non-native species could increase due to a lack of native species prescriptions in seed mixes.

Visual Resources

Affected Environment: The proposed action would take place on private lands classified by the BLM as a Visual Resource Management (VRM) Class IV area (BLM 1984). The management of visual resources in Class IV areas allows for major modifications of the existing character of the landscape. In these areas, alterations may dominate the view and may be the major focus of viewer attention. However, attempts should be made to minimize impacts in Class IV areas through careful project design aimed at minimizing disturbance and repeating basic landscape elements.

Visual resource management objectives do not apply to non-BLM lands, but visual concerns may be addressed on private lands where Federal actions occur. Although VRM class designations of non-public lands are an indication of the visual values for those lands, those values are only protected by landowner discretion.

The proposed action would not affect any key viewing areas or viewsheds. In particular, the proposed action would not be seen from the key viewing areas of the I-70 corridor or the town of Parachute.

Proposed Action:

Environmental Consequences: The proposed developments would present contrasts in color, line, shape and texture with the surrounding pinyon-juniper woodlands. Interim reclamation of the well pad and pipeline with seeded shrub and grass species would reduce the contrast after two to three growing seasons. Linear contrasts would be reduced by placing the pipeline adjacent to the proposed road. After completion and reclamation, long-term impacts are expected due to the removal of the trees and the presence of production facilities. However, the landscape modifications are not expected to be visible from I-70 corridor or the town of Parachute.

The production facilities planned for placement on the pad should be painted a conforming environmental color. Efforts should be made to leave as much existing vegetation as possible to screen the excavated disturbance. The facilities should be placed against the cut side of the pad, where feasible. Mitigation measures that would reduce overall long-term visual impacts resulting from the addition of the new facilities are presented in Appendix A (Number 14).

No Action Alternative:

Environmental Consequences: Impacts from the no action would be generally similar to the proposed action. However, long-term impacts could be more substantial because the private land owner would be under no obligation to implement measures to mitigate impacts to visual resources.

Wildlife, Aquatic (includes an analysis of Public Land Health Standard 3)

Affected Environment: The proposed developments would be placed near an ephemeral tributary to Wallace Creek that then enters the Colorado River. Wallace Creek is perennial and contains brook trout and Colorado River cutthroat trout. The Colorado River, which is located approximately 3.5 miles to the north, contains a variety of fishes and aquatic insects. Wallace Creek is fish-bearing above 6,400 feet; an elevation that is slightly above that of the project area (i.e., 6,200 feet).

Proposed Action:

Environmental Consequences: It is likely that site-specific erosion potential would be increased due to clearing of vegetation to accommodate the proposed developments. This would be the case until such a time as adequate vegetation establishment is obtained through reclamation. Roads would increase erosion and sedimentation indefinitely. Increased sediment could impact sediment intolerant fish species such as trout by reducing aquatic insect productivity as streams become silted and clean gravels and cobbles are covered. Sediment can also fill in important spawning substrates and limited pool habitats.

The amount of sediment that ultimately reaches the Colorado River would have no impact on fisheries as sediment levels are projected to be well within the background levels for the Colorado River. Sediment is not expected to affect the fish-bearing portion of Wallace Creek because the project area is below the elevation where fish occur. Potential impacts to downstream fishes and aquatic insects would be minimized through the implementation of mitigation measures presented in Appendix A (Numbers 7-11, 13).

No Action Alternative:

Environmental Consequences: The no action alternative would result in similar surface disturbance impacts as those identified in the proposed action. Although the BLM would have no authority to prescribe and enforce mitigation measures, measures designed to minimize the potential for erosion and sedimentation would be mandated by the COGCC.

Analysis on the Public Land Health Standard 3 for Plant and Animal Communities (partial, see also **Vegetation and Wildlife, Terrestrial**): The proposed action and no action alternative, in conjunction with large amounts of similar activity occurring in the larger watershed area, may trend the area away from meeting Standard 3 because of accumulated erosion and sediment discharge.

Wildlife, Terrestrial (includes an analysis on Public Land Health Standard 3)

Affected Environment: The project area is comprised primarily of pinyon-juniper woodlands. Understory vegetation consists of mostly native grasses and forbs with some cheatgrass. The area provides cover, forage, breeding, and nesting habitat for a variety of big game, small game, and non-game mammals, reptiles, and birds. The area is mapped as important big game winter range (CDOW 2006).

Proposed Action:

Environmental Consequences: The proposed action would result in the direct loss of approximately 4.6 acres of terrestrial wildlife habitat. Effective habitat loss would be greater due to increased noise levels and human presence. Wildlife would likely avoid habitat within an eighth of a mile of the developments. Public access is not available due to private surface ownership which would reduce the amount of effective habitat loss to a degree.

Although the area is mapped as big game winter range, the surface location of this pad is on private land where timing limitations designed to protect wintering game are not in place. Drilling that occurs during the winter would likely displace animals from preferred habitats, and increase stress and energy consumption by resident animals. This can impact over winter survival, as big game using severe winter range are likely to be disturbed by noise and human activity associated with well pad construction and drilling.

Standard measures are incorporated into the APD along with other measures (e.g., reclamation) that would help to mitigate wildlife impacts (Appendix A, Numbers 13).

No Action Alternative:

Environmental Consequences: Impacts from the no action alternative would be generally similar to the proposed action. However, the loss in effective habitat would be for a shorter duration because one rather than two wells would be developed.

Analysis on the Public Land Health Standard for Plant and Animal Communities (partial, see also **Vegetation and Wildlife, Aquatic**): Both the proposed action and no action alternative would result in direct and indirect losses of habitat, further fragmenting remaining habitats, and resulting in increased human use in the area. Given the level of activity in the greater area, the proposed action and no action alternative would further trend the watershed away from meeting Standard 3 for some terrestrial wildlife species.

SUMMARY OF CUMULATIVE IMPACTS

The *Glenwood Springs Oil and Gas Leasing and Development Final Supplemental EIS* (FSEIS) (BLM 1999b) analyzed three alternatives for oil and gas development in the Glenwood Springs Resource Area (GSRA). The assessment included an analysis of impacts of past, present, and reasonable foreseeable future actions, including predicted future oil and gas development, on both public and private lands. Since the FSEIS presents the most current analysis of cumulative impacts in the project area, it is incorporated by reference.

Until relatively recently, modifications of the region have been characteristic of agricultural and ranching lands, with localized industrial impacts associated with the railroad and I-70 highway corridors. More recently, these changes are cumulative to the growth of residential and commercial uses, utility corridors, oil and gas developments, and other rural industrial uses. These increasing activity levels have accelerated the accumulation of impacts in the area. These impacts have included: (1) direct habitat losses; (2) habitat fragmentation and losses in habitat effectiveness; (3) elevated potential for runoff, erosion, and sedimentation; (4) expansion of noxious weeds and other invasive species; and (5) increased noise and traffic and reductions in the scenic quality of the area (BLM 1999: 4-1 to 4-68).

Although none of the cumulative impacts described in the FSEIS were characterized as significant, and while new technologies and regulatory requirements have reduced the impacts of some land uses, it is nonetheless clear that past, present, and reasonably foreseeable future actions has had and would continue to have adverse affects on various elements of the human environment. The anticipated impact levels for existing and future actions range from negligible to locally major, and primarily negative, for specific resources. The primary reasons for this assessment are twofold: (1) the rate of development, particularly oil and gas development, is increasing in the area, resulting in an accelerated accumulation of individually nominal effects; and (2) the majority of residential and commercial expansion, as well as oil and gas development, have occurred, and is likely to continue to occur, on private holdings where mitigation measures designed to protect and conserve resources are not in effect.

It is clear that the proposed action would contribute to the collective adverse impact for some resources. Although the contribution would be minor, additional ground disturbance would occur and additional habitat would be lost. Thus, the proposed action would contribute incrementally to the collective impact to vegetation, migratory birds, terrestrial wildlife, and other resources. However, the contribution to the accumulated effects would be minor because the scale of the proposed development is relatively small and mitigation measures represented by the conditions of approval for resource protection are mandated for implementation (Appendix A).

PERSONS / AGENCIES CONSULTED:

Miracle Pfister, Permit Agent, EnCana Oil & Gas (USA) Inc.
 Joe Schmid, Construction Foreman, EnCana Oil & Gas (USA) Inc.
 Dayton Slauch, Surveyor, Tri-State Land Surveying , Inc.
 Brenda Linster Herndon, Permit Agent - Gathering, EnCana Oil & Gas (USA) Inc.
 Preston Nelson, Permit Coordinator - Gathering, EnCana Oil & Gas (USA) Inc.

INTERDISCIPLINARY REVIEW:

<i>Name</i>	<i>Title</i>	<i>Responsibility</i>
Jim Byers	Natural Resource Specialist	Team Leader
Mark Ennes	Planning and Environmental Coordinator	Access and Transportation, Noise, NEPA compliance
Cheryl Harrison	Archaeologist	Cultural Resources, Native American Religious Concerns
Kay Hopkins	Outdoor Recreation Planner	Visual Resources, ACECs, WSRs
Jeff O’Connell	Hydrologist	Soil, Air, Water, Geology,
Karen Conrath	Geologist	Paleontology
Beth Brenneman	Ecologist	Vegetation, Special Status Species (plants), Invasive Non-native species
Jeff Cook	Wildlife Biologist	Terrestrial and Aquatic wildlife, Special Status Species (fish and wildlife), Migratory Birds
Marty O’Mara	Petroleum Engineer	Downhole Conditions of Approval

REFERENCES:

Bureau of Land Management (BLM)

- 1984 *Glenwood Springs Resource Management Plan*. Glenwood Springs Field Office.
- 1991 *Record of Decision, Oil and Gas Plan Amendment to the Glenwood Springs Resource Management Plan*. Glenwood Springs Field Office.
- 1999a *Oil and Gas Leasing and Development – Record of Decision and Resource Management Plan Amendment*. Glenwood Springs Field Office.
- 1999b *Glenwood Springs Oil and Gas Leasing and Development Final Supplemental EIS (FSEIS)*. Glenwood Springs Field Office.
- 2000 *Land Health Assessment - Battlement Mesa Area*. Report on file, Glenwood Springs Field Office.
- 2004 *Draft Roan Plateau Planning Area Resource Management Plan Amendment and Environmental Impact Statement*. Glenwood Springs Field Office.
- 2006 *Final Roan Plateau Planning Area Resource Management Plan Amendment and Environmental Impact Statement*. Glenwood Springs Field Office.

Colorado Division of Wildlife (CDOW)

- 2006 Elk and Mule Deer GIS Data.

Harris. C.M.

- 1991 *Handbook of Acoustical Measurements and Noise Control*. McGraw-Hill, Inc., New York, NY.

La Plata County, Colorado.

- 2002 Final La Plata County Impact Report. October.

U.S. Department of Agriculture (USDA)

- 1985 *Soil Survey of Rifle Area, Colorado: Parts of Garfield and Mesa Counties*. Soil Conservation Service [Natural Resources Conservation Service].

U.S. Department of Interior and U.S. Department of Agriculture.

- 2006 *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development*. The Gold Book. Fourth edition.

U.S. Environmental Protection Agency (EPA)

- 1974 Information on Noise Levels Identified as Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. EPA-550/9-74-004, Arlington, VA.

U.S. Fish and Wildlife Service (USFWS)

- 2002 *Birds of Conservation Concern*. Division of Migratory Bird Management, Arlington, VA. 99 pp. [Online version available at <http://migratorybirds.fws.gov/reports/bcc2002.pdf>].

FONSI

CO-140-2007-055 EA

EnCana Oil & Gas (USA) Inc. Proposal to Drill 1 Federal Well (Knox Federal 14-15) from Proposed Well Pad (J14OU)

The environmental assessment analyzing the environmental effects of the proposed action has been reviewed. The approved mitigation measures result in a Finding of No Significant Impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

DECISION RECORD

DECISION: It is my decision to approve the Application for Permit to Drill (APD) for the Knox Federal 14-15 well and associated developments for the proposed private surface location (J14OU pad) with the Conditions of Approval presented in Appendix A in order to provide for the orderly, economical and environmentally sound exploration and development of oil and gas resources on valid oil and gas leases.

RATIONALE:

1. Approval of the proposed action is validating the rights granted with the Federal oil and gas leases to develop the leasehold to provide commercial commodities of oil and gas.
2. The environmental impacts have been mitigated with measures included in the attached Conditions of Approval.

MITIGATION MEASURES: Mitigation measures presented in Appendix A will be incorporated as Conditions of Approval for both surface and drilling operations.

NAME OF PREPARER: Jim Byers, Natural Resource Specialist

SIGNATURE OF PLANNING AND ENVIRONMENTAL COORDINATOR:



Planning and Environmental Coordinator

6/1/07

Date

SIGNATURE OF AUTHORIZED OFFICIAL:



Authorized Officer

6/1/07

Date

APPENDIX A
CONDITIONS OF APPROVAL

SURFACE USE CONDITIONS OF APPROVAL

1. Administrative Notification. At least forty-eight (48) hours prior to construction of access road, pipeline and/or well pad, the operator shall notify BLM representative of construction startup plans.
2. Dust Abatement. The operator shall implement dust abatement measures as needed or directed by the BLM authorized officer. The level and type of treatment (watering or application of various dust agents, surfactants, and road surfacing material) may be changed in intensity and must be approved by the BLM authorized officer. Dust control is needed to prevent heavy plumes of dust from road use that create safety problems and disperses heavy amounts of particulate matter on adjacent vegetation.
3. Cultural Resource Education/Discovery.
 - a. All persons in the area who are associated with this project must be informed that if anyone is found disturbing historic, archaeological, or scientific resources, including collecting artifacts, the person or persons shall be subject to prosecution.

Pursuant to 43 CFR 10.4(g), the BLM authorized officer must be notified, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4 (c) and (d), activities must stop in the vicinity of the discovery and the discovery must be protected for 30 days or until notified to proceed by the authorized officer.

If in connection with operations under this contract the project proponent, his contractors, subcontractors, or the employees of any of them, discovers, encounters or becomes aware of any objects or sites of cultural or paleontological value or scientific interest such as historic or prehistoric ruins, graves or grave markers, fossils, or artifacts, the proponent shall immediately suspend all operations in the vicinity of the cultural or paleontological resource and shall notify the BLM authorized officer of the findings (16 U.S.C. 470h-3, 36 CFR 800.112). Operations may resume at the discovery site upon receipt of written instructions and authorization by the authorized officer.

Approval to proceed shall be based upon evaluation of the resource. Evaluation shall be by a qualified professional selected by the authorized officer from a federal agency insofar as practicable. When not practicable, the holder shall bear the cost of the services of a non-federal professional.

Within five working days, the authorized officer shall inform the holder as to:

- whether the materials appear eligible for the National Register of Historic Places
- the mitigation measures the holder shall likely have to undertake before the site can be used (assuming in situ preservation is not necessary)
- a timeframe for the authorized officer to complete an expedited review under 36 CFR 800.11, or any agreements in lieu thereof, to confirm through the State Historic Preservation Officer that the findings of the authorized officer are correct and the mitigation is appropriate

The proponent may relocate activities to avoid the expense of mitigation and/or the delays associated with this process, as long as the new area has been appropriately cleared of resources and the exposed materials are recorded and stabilized. Otherwise, the proponent shall be responsible for mitigation costs. The authorized officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the authorized officer that the required mitigation has been completed, the proponent shall then be allowed to resume construction.

Antiquities, historic, prehistoric ruins, or objects of scientific interest that are outside the authorization boundaries but directly associated with the impacted resource shall also be included in this evaluation and/or mitigation.

Antiquities, historic, prehistoric ruins, or objects of scientific interest, identified or unidentified, that are outside the authorization and not associated with the resource within the authorization shall also be protected. Impacts that occur to such resources, which are related to the authorizations activities, shall be mitigated at the proponent's cost including Native American consultation cost.

- b. The Native American Graves Protection and Repatriation Act (NAGPRA), requires that if inadvertent discovery of Native American Remains or Objects occurs, activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice made to the BLM Authorized Officer, as well as the appropriate Native American group(s) (IV.C.2). Notice may be followed by a 30-day delay (NAGPRA Section 3(d)). Further actions also require compliance under the provisions of NHPA and the Archaeological Resource Protection Act.

4. Weed Control. The Operator shall regularly monitor and promptly control noxious weeds or other undesirable plant species as set forth in the Glenwood Springs Energy Office *Noxious and Invasive Weed Management Plan for Oil and Gas Operators*, dated March 2007. A Pesticide Use Proposal (PUP) must be approved by the BLM prior to the use of herbicides.

5. Migratory Birds. It shall be the responsibility of the operator to comply with the Migratory Bird Treaty Act with respect to “take” of migratory bird species. “Take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The operator shall prevent use by migratory birds of reserve pits, produced water pits, and evaporation pits, that store or are expected to store fluids which may pose a risk to such birds (e.g., migratory waterfowl, shorebirds, wading birds, and raptors) during completion and after completion activities have ceased. Several established methods to prevent bird access are known to work. Methods may include but are not limited to netting, the use of bird-balls, or other alternative methods that effectively prevent bird access/use. Regardless of the method used, it should be applied within 24 hours after completion activities have begun. All mortality or injury to species protected by the Migratory Bird Treaty Act shall be reported immediately to the BLM project lead.

6. Raptor Nesting. To protect nesting raptors, a survey shall be conducted prior to construction and drilling activities that are to be initiated during the raptor nesting season (February 1 to August 15). The survey shall include all potential nesting habitat within 0.25 mile of proposed well pads and 0.125 mile of any access roads, pipeline, or other surface facilities. Results of the survey shall be submitted to the BLM. Contact Jeff Cook, Glenwood Springs Energy Office Wildlife Biologist, at 970-947-5231 or jeffrey_cook@blm.gov. If a raptor nest is located within the buffer widths specified above, a 60-day Timing Limitation (TL) shall be applied to prohibit initiation of construction and drilling activities. The dates of this TL shall be based on the particular species of raptor.

7. Pipeline Construction. Pipeline trench as it transitions onto well pad surface shall be aligned at toe of road fill slope east of Corner 2 and trench onto pad surface near Corner 3 - instead of through the 15 feet of road fill as implied on Sheet 4 of 11.

8. Tree Disposal for Pad Construction and Interim Reclamation. Where road, pipeline or pad construction requires the removal of pinyon pine trees between late March to early November, the trees shall disposed of within 24 hours of disturbance in the following manner to avoid attracting pinyon *Ips*

beetles into live standing trees and mitigate effects of ongoing *Ips* beetle infestation in the local area: (1) broken down with earthmoving equipment and buried in excess material pile or at toe of fill slopes; (2) cut down, sectioned and chipped with Hydroaxe-type equipment capable of chipping large pinyon trees; or (3) cut and removed trees from BLM land and hauled to Colorado State Forest Service-approved disposal site.

Juniper trees and other brush cleared and grubbed prior to topsoil stripping shall be windrowed at north side of pad and serve as natural erosion barrier for north-side fill slopes of pad.

Landowner requests that large tree stems and stumps NOT be spread back onto reshaped and resloped pad during interim reclamation.

9. Material Sidecasting Limits. The well pad shall be constructed to avoid sidecasting of material into dry gulches at west side of pad.

10. Road Construction Standards and Surfacing. Roads shall be crowned, ditched, surfaced, and constructed to BLM Gold Book standards. Roads should be periodically re-graveled when ruts exceed 6 inches in depth or as directed by the Authorized Officer. Initial gravel application shall be a minimum lift of **6 inches**. The existing 2-track road bearing south of Corner 3 on pad shall remain clear and open for motorized travel.

11. Road Maintenance. Operator shall be responsible for providing timely year-round road maintenance and cleanup on the access road. A regular schedule for maintenance shall include, but not be limited to, blading, ditch and culvert cleaning, road surface replacement and dust abatement. The road shall be crowned, ditched, and drained with culverts and/or water dips. Initial gravel application shall be a minimum of 4 inches. When rutting within the traveled way becomes greater than 6 inches, gravel shall be applied as approved by the Authorized Officer.

12. Paleontological Resources. All persons associated with operations under this authorization shall be informed that any objects or sites of paleontological or scientific value, such as vertebrate or scientifically important invertebrate fossils, shall not be damaged, destroyed, removed, moved, or disturbed. If in connection with operations under this authorization any of the above resources are encountered the operator shall immediately suspend all activities in the immediate vicinity of the discovery that might further disturb such materials and notify the BLM authorized officer of the findings. The discovery must be protected until notified to proceed by the BLM authorized officer.

As feasible, the operator shall suspend ground-disturbing activities at the discovery site and immediately notify the BLM authorized officer of any finds. The BLM authorized officer shall, as soon as feasible, have a BLM-permitted paleontologist check out the find and record and collect it if warranted. If ground-disturbing activities cannot be immediately suspended, the operator shall work around or set the discovery aside in a safe place to be accessed by the BLM-permitted paleontologist.

13. Reclamation. Reclamation goals, objectives, timelines, measures, and monitoring methods for final reclamation of oil and gas disturbances are described in Appendix I (Surface Reclamation) of the 1998 Draft Supplemental EIS (DSEIS). The specific measures described below shall be followed during interim reclamation of disturbed surfaces associated with well pads, access roads, and pipelines. These measures, except seedbed preparation, shall also apply to temporary reclamation of topsoil storage piles and surfaces that are subject to interim reclamation but not scheduled to undergo interim reclamation for more than 1 year.

- a. Seedbed Preparation. For interim reclamation, all slopes shall be reshaped prior to seedbed preparation. Initial seedbed preparation shall consist of backfilling, leveling, and ripping all areas to be seeded to a minimum depth of 18 inches with a furrow spacing of 2 feet, followed by recontouring the surface and then spreading the stockpiled topsoil evenly. Prior to seeding, the seedbed shall be scarified and left with a rough surface. No depressions shall be left that would trap water and form ponds. Final seedbed preparation shall consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding. NOTE: Seedbed preparation is not required for topsoil storage piles or other areas of temporary reclamation.

Requests for use of soil amendments, including basic product information, shall be submitted to the BLM for approval.

- b. Seed Mixes. Selection of seed to be used in temporary or interim reclamation shall comply with the menu-based seed mixes in the letter provided to oil and gas operators dated April 16, 2007. For private surfaces, the menu-based seed mixes are recommended, but the landowner would have ultimate authority over the seed mix to be used in reclamation. The seed shall be certified free of noxious weeds. Seed may contain up to 2.0 percent of “other crop” seed by weight, including the seed of other agronomic crops and native plants; however, a lower percent of other crop seed is recommended. Seed tags or other official documentation shall be supplied to the BLM Glenwood Springs Energy Office Ecologist (Beth Brenneman, 970-947-5232 or beth_brenneman@blm.gov) at least 14 days before the date of proposed seeding for acceptance. Seed that does not meet the above criteria shall not be applied to public lands.
- c. Seeding Procedures. Seeding shall be conducted no more than 24 hours following completion of final seedbed preparation. A seed mix consistent with BLM standards in terms of species and seeding rate for the specific habitat type shall be used on all BLM lands affected by the project (see Attachments 1 and 2 of the letter provided to operators dated April 16, 2007).

Where practicable, seed shall be installed by drill-seeding to a depth of 0.25 to 0.5 inch. Where drill-seeding is impracticable, seed may be installed by broadcast-seeding at twice the drill-seeding rate, followed by raking or harrowing to provide 0.25 to 0.5 inch of soil cover. Hydroseeding and hydromulching may be used in temporary reclamation or in areas where drill-seeding or broadcast-seeding/raking are impracticable. Hydroseeding and hydromulching must be conducted in two separate applications to ensure adequate contact of seeds with the soil.

If interim revegetation is unsuccessful, the operator shall implement subsequent reseeding until interim reclamation standards are met. Requirements for reseeding of unsuccessful temporary reclamation shall be considered on a case-by-case basis.

- d. Mulch. Mulch shall be applied within 24 hours following completion of seeding. In areas of interim reclamation that used drill-seeding or broadcast-seeding/raking, mulch shall consist of crimping certified weed-free straw or certified weed-free native grass hay into the soil. Hydromulching may be used in areas of interim reclamation where crimping is impracticable, in areas of interim reclamation that were hydroseeded, and in areas of temporary reclamation regardless of seeding method.

NOTE: As an exception to this provision, mulch is not required in areas where erosion potential mandates use of a biodegradable erosion-control blanket (straw matting).

- e. Erosion Control. Cut-and-fill slopes shall be protected against erosion with the use of water bars, lateral furrows, or other measures approved by the authorized officer. Biodegradable straw matting, bales or wattles of weed-free straw or weed-free native grass hay, or well-anchored fabric silt fence shall be used on cut-and-fill slopes and along drainages to protect against soil

erosion. Additional BMPs shall be employed as necessary to reduce erosion and offsite transport of sediment.

- f. Site Protection. The pad shall be fenced to BLM standards to exclude livestock grazing for the first two growing seasons or until seeded species are firmly established, whichever comes later. The seeded species shall be considered firmly established when at least 50% of the new plants are producing seed. The authorized officer will approve the type of fencing.
- g. Monitoring. The operator shall conduct annual monitoring surveys of reclaimed areas and shall submit an annual monitoring report to the authorized officer by December 31 of each year. The monitoring program shall use the four Reclamation Categories defined in Appendix I of the 1998 DSEIS to assess progress toward reclamation objectives. The annual report shall document whether attainment of reclamation objectives appears likely. If one or more objectives appear unlikely to be achieved, the report shall identify appropriate corrective actions. Upon review and approval of the report by the BLM, the operator shall be responsible for implementing the corrective actions or other measures specified by the authorized officer.

14. Facility Placement and Color. The paint color to be used on all surface facilities including the metal containment rings surrounding the tank batteries is Shale Green (5Y4/2). As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) shall not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.

DOWNHOLE CONDITIONS OF APPROVAL
APPLICATION FOR PERMIT TO DRILL

Company/Operator: **EnCana Oil & Gas(USA), Inc.**

		Pad Location	NWSE Sec 14, T08S, R96W	
Well Name	Well No.	API No.	Bottom Hole Location	Lease
Knox Fed	14-15 (J14OU)		SWSW Sec 14 T8S, R96W	COC60434

NOTIFICATION REQUIREMENTS

- Location Construction - at least forty-eight (48) hours prior to construction of location and access roads.
- Spud Notice - at least twenty-four (24) hours pre and post spud.
- Casing String and Cementing - at least twenty-four (24) hours prior to running casing and cementing all casing strings.
- BOP and Related Equipment Tests - at least twenty-four (24) hours prior to initiating pressure tests.
- First Production-Notice - within five (5) business days after new well begins, or production resumes after well has been off production for more than ninety (90) days.
- Reclamation - At least (24) hours prior to re-shaping the well pad.

For more specific details on notification requirements, please check the Conditions of Approval for Notice to Drill and Surface Use Program.

APD approval is valid for a period of one (1) year from the signature date. An extension period may be granted, if requested, prior to the expiration of the original approval period.

Please contact Steve Ficklin (970)947-5213 or Jennifer Gallegos (970)947-5220 of the Glenwood Springs Energy office at least twenty-four (24) hours pre and post spud and at least 24 hours prior to running casings and conducting the BOP test.

**DOWNHOLE CONDITIONS OF APPROVAL FOR NOTICE TO DRILL
FEDERAL (J14OU) PAD**

1. The TOC for the production casing needs to be a minimum of 200' above the Mesa Verde Formation either during the primary cement job or through remedial cementing. The TOC for each well must be a minimum depth of:

<u>Well No.</u>	<u>MD</u>	<u>Minimum TOC</u>
14-15 (J14OU)	2717'	<u>TVD</u> 2574'

2. A cement bond log (CBL) will be run from the production casing shoe to **TOC** and shall be utilized to determine the bond quality for the production casing.
3. Any usable water zones encountered below the surface casing shall be isolated and or protected by cementing across the zone. The minimum requirement is to cement from 50 feet above to 50 feet below each usable water zone encountered.
4. Open hole logs (PEX) shall be run in the surface section of the hole to determine shallow gas and waters. This COA is necessary only for the first well drilled on a pad.

REGULATORY REMINDERS

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

All drilling operations, unless otherwise specifically approved in the APD, must be conducted in accordance with Onshore Oil and Gas Order No. 2.

All lease and/or unit operations will be conducted in such a manner that full compliance is made with applicable laws, regulations (43 CFR 3100), Onshore Oil and Gas Orders, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors.

A copy of the approved application for permit to drill (APD), including the conditions of approval and accompanying surface use plan will be furnished to the field representative by the operator to insure compliance and will be available to authorized personnel at the drillsite whenever active construction or drilling operations are underway.

Be aware fire restrictions may be in effect when location is being constructed and/or when well is being drilled. Contact the appropriate Surface Management Agency for information.

Section 102(b)(3) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provisions of the operating regulations at Title 43 CFR 3162.4-1(c), requires that "not later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed."

If you fail to comply with this requirement in the manner and time allowed, you shall be liable for a civil penalty of up to \$10,000 per violation for each day such violation continues, not to exceed a maximum of 20 days. See Section 109(c)(3) of the Federal Oil and Gas Royalty Management Act of 1982 and the implementing regulations at Title 43 CFR 3162.4-1(b)(5)(ii).

In the event after-hours approval or notification is necessary, please contact one of the following individuals:

Marty O'Mara	C: 970.319.5837
Petroleum Engineer	W: 970.947.5221

Steve Ficklin	W: 970.947.5213
Petroleum Engineering Tech.	C: 970.319.2509

Jennifer Gallegos	W: 970.947.5220
Petroleum Engineering Tech.	C: 970.319.2211

Jim Byers	W: 970.947.5222
Natural Resource Specialist	

BLM Fax: 970.947.5267

APPENDIX B

NONEXEMPT EXPLORATION AND PRODUCTION WASTES

EPA'S LIST OF NONEXEMPT EXPLORATION AND PRODUCTION WASTES

While the following wastes are nonexempt, they are not necessarily hazardous.

- Unused fracturing fluids or acids
- Gas plant cooling tower cleaning wastes
- Painting wastes
- Oil and gas service company wastes, such as empty drums, drum rinsate, vacuum truck rinsate, sandblast media, painting wastes, spent solvents, spilled chemicals, and waste acids
- Vacuum truck and drum rinsate from trucks and drums, transporting or containing nonexempt waste
- Refinery wastes
- Liquid and solid wastes generated by crude oil and tank bottom reclaimers
- Used equipment lubrication oils
- Waste compressor oil, filters, and blowdown
- Used hydraulic fluids
- Waste solvents
- Waste in transportation pipeline-related pits
- Caustic or acid cleaners
- Boiler cleaning wastes
- Boiler refractory bricks
- Incinerator ash
- Laboratory wastes
- Sanitary wastes
- Pesticide wastes
- Radioactive tracer wastes
- Drums, insulation and miscellaneous solids