U.S. Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-UT- G010-2014-0012
November, 2013

Newfield MDP 29

Location: **Sections 20, 21 and 22, T. 8 S., R 17 W.**

Applicant/Address: **Newfield Production Company**
10530 South County Road #33
Myton, Utah 84052

U.S. Department of the Interior
Bureau of Land Management
Vernal Field Office
170 S 500 E
Vernal, UT 84078
Phone: 435-781-4400
Fax: 435-781-4410

BLM

FINDING OF NO SIGNIFICANT IMPACT

Newfield MDP 29
Environmental Assessment DOI-BLM-UT-G010-2014-0012

Finding of No Significant Impact:
Based on the analysis of potential environmental impacts contained in the attached environmental assessment, and considering the significance criteria in 40 CFR 1508.27, I have determined that the action will not have a significant effect on the human environment. An environmental impact statement is therefore not required.

Authorized Officer

NOV 0 6 2013
Date

ENVIRONMENTAL ASSESSMENT

Newfield MDP 29
Environmental Assessment DOI-BLM-UT-G010-2014-0012

Decision:
It is my decision to authorize Newfield Production Company's proposed split estate wells as described in the proposed action of Environmental Assessment DOI-BLM-UT-G010-2014-0012.

Well Identification	Host Location	Lease
O-21-8-17	8-20-8-17	UTU-076954
L-20-8-17		
H-21-8-17	7-21-8-17	
O-22-8-17	12-22Y-8-17	UTU-066191
J-21-8-17		

Summary of the Selected Alternative:
This decision includes the following components:

Five directional wells drilled from three existing pads on private surface into Federal leases. Approximately 0.79 acres of disturbance/redisturbance would occur.

Conditions of Approval:

- All internal combustion equipment would be kept in good working order.
- Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer.
- Open burning of garbage or refuse would not occur at well sites or other facilities.
- Drill rigs would be equipped with Tier II or better diesel engines
- Low bleed pneumatics would be installed on separator dump valves and other controllers.
- During completion, not venting would occur, and flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible.
- Telemetry will be installed to remotely monitor and control production.
- When feasible, two or more rigs (including drilling and completion rigs) will not be run simultaneously within 200 meters of each other. If two or more rigs must be run simultaneously within 200 meters of each other, then effective public health buffer zones out to 200 meters (m) from the nearest emission source will be implemented. Examples of an effective public health protection buffer zone include the demarcation of a public access exclusion zone by signage at intervals of every 250 feet that is visible from a distance of 125 feet during daylight hours, and a physical buffer such as active surveillance to ensure the property is not accessible by the public during drilling operations. Alternatively, the proponent may demonstrate compliance with the 1-hour NO2 National Ambient Air Quality Standards (NAAQS) with appropriate and accepted near-field modeling. As part of this demonstration, the proponent may propose alternative mitigation that could include but is not limited to natural gas–fired drill rigs, installation of NOX controls, time/use restrictions, and/or drill rig spacing.

- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horse power must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 grams of NOx per horsepower-hour.
- Green completions would be used for all well completion activities where technically feasible.
- Enhanced VOC emission controls with 95% control efficiency would be employed on production equipment having a potential to emit greater than 5 tons per year.

Prime and Unique Farmlands

If drilling the H-21-8-17 does not commence by January 15, 2014, the well must be drilled using closed loop technology.

Colorado River fish Species:

1. The best method to avoid entrainment is to pump from an off-channel location – one that does not connect to the river during high spring flows. An infiltration gallery constructed in a service approved location is best.

2. If the pump head is located in the river channel the following stipulations apply:
    a. Do not situate the pump in a low-flow or no-flow area as these habitats tend to concentrate larval fishes.

    b. Limit the amount of pumping, to the greatest extent possible, during that period of the year when larval fish may be present (April 1 to August 1).

    c. Limit the amount of pumping, to the greatest extent possible, during the midnight hours (10pm to 2 am), as larval drift studies indicate that this is a period of greatest daily activity. Dusk is the preferred pumping time, as larval drift abundance is lowest during this time.

3. Screen all pump intakes with 3/32" mesh material.

4. Approach velocities for intake structures should follow the National Marine Fisheries Service's document "fish screening criteria for anadromous salmonids". For projects with an in-stream intake that operate in stream reaches where larval fish may be present, the approach velocity should not exceed 0.33 feet per second (ft/s).

5. Report any fish impinged on the intake screen or entrained into irrigation canals to the service (801.975.3330) or the Utah Division of Wildlife Resources:

   Northeastern Region
   152 East 100 North, Vernal, UT 84078
   Phone: (435)781-9453

Rationale for the Decision:
The proposed wells and related facilities meet the BLM's purpose and need to allow the lessee to develop the subject mineral lease indicated above. The need for the action is established by 43 CFR 3162.3-1 and Onshore Oil and Gas Order No. 1 (43 CFR 3164.1) which requires BLM approval of APDs on a federal or Indian lease even with split estate (i.e. non-federal or non-Indian surface).

Well	Onsite Date	Landowner Attendance	Surface Owner	Surface Owner Agreement Signed
O-21-8-17	12/20/2012	No	Brad and JoAnn Nelson Family Trust Lee and Louise Nelson Family Trust	September 25, 1984
L-20-8-17				
H-21-8-17	12/20/2012	No	Wade J. Price	November 3, 1997
O-22-8-17	12/20/2012	No	John H Price and Brenda P. Price	July 24, 1998
J-21-8-17				

The above factors and the analysis contained in DOI-BLM-UT-G010-2014-0012 EA for Newfield Production Company's proposed wells were carefully considered and evaluated. In addition, the APD and surface owner agreement were reviewed. All reports were read and the information contained weighed in determining the appropriateness of the decision stated above.

Authorized Officer (signature)

NOV 0 6 2013
Date of signature

Appeals:
This decision is effective upon the date it is signed by the authorized officer. The decision is subject to appeal. Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, Utah State Office, P.O. Box 45155, Salt Lake City, Utah, 84145-0155, within 20 business days of the date this Decision is received or considered to have been received.

If you wish to file a petition for stay, the petition for stay should accompany your notice of appeal and shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied;
2. The likelihood of the appellant's success on the merits;
3. The likelihood of irreparable harm to the appellant or resources if the stay is not granted, and;
4. Whether the public interest favors granting the stay.

CHAPTER 1
INTRODUCTION

INTRODUCTION

This Environmental Assessment (EA) has been prepared by the Bureau of Land Management Vernal Field Office to analyze Newfield's Application for Permit to Drill. The following well would be located on private lands and directionally drilled into Federal minerals.

Well Identification	Host Location	Lease
O-21-8-17	8-20-8-17	UTU-076954
L-20-8-17		
H-21-8-17	7-21-8-17	
O-22-8-17	12-22Y-8-17	UTU-066191
J-21-8-17		

The EA assists the BLM in ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. While the BLM has no jurisdiction over surface impacts on these split estate lands, the surface operations (well pad and pipeline construction and maintenance) are connected actions to drilling and operating the wells, and must be analyzed as indirect effects of the BLM proposed action (BLM 2008, p. 47). Should the BLM be unable to find that the indirect impacts, either singularly or cumulatively, are not significant, an Environmental Impact Statement must be prepared prior to approving the APDs.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The BLM decision to be made is whether or not to approve the APDs. The purpose of the action is to allow the lessee to develop the Federal mineral lease(s) indicated above. The need for the action is established by 43 CFR 3162.3-1 and Onshore Oil and Gas Order No. 1 (Federal Register 2007) which requires BLM approval of APDs on a federal or Indian lease even with split estate (i.e. non-federal or non-Indian surface).

SCOPING AND PUBLIC INVOLVMENT AND ISSUES

The Interdisciplinary Checklist contained within the Utah NEPA Guidebook was not completed for this EA because many of the resources/concerns included in it are not relevant to non-Federal surface. The relevant resources/concerns listed within Appendix 1 of the BLM NEPA Handbook were considered. The following resources/concerns were found to not be impacted to a degree requiring detailed analysis:

- Cultural Resources
- Native American Religious concerns
- Wastes, Hazardous or Solid

- Water Quality Drinking-Ground
- Floodplains
- Wetlands/Riparian Zones
- Migratory Birds

The following issues were identified:

Air Quality

Issue: Emissions from engines may contribute to degraded air quality in the Uintah Basin.

Prime and Unique Farmlands

The reserve pit for one well pad will encroach on an irrigated field.

USFWS Threatened or Endangered Species

Issue: Water used for drilling could contribute to depletion of habitat for Colorado River system endangered fish species.

CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

BLM resource specialists reviewed Newfield's Proposed Action and assessed the type and magnitude of potential impacts to the Project Area. Based on this review, the following alternatives were developed for analysis in this EA:

Alternative A –This alternative analyzes the impact of drilling five directional wells from three existing pads.

Alternative B – No Action Alternative: Analysis of this alternative is provides a baseline for the impact analysis.

These alternatives are discussed in detail in this chapter

ALTERNATIVE A - PROPOSED ACTION

Specifically, the Proposed Action includes the following primary components:

- Five directional wells drilled from three existing pads on private surface. 0.45 acre of redisturbance and 0.34 acre of new surface disturbance are associated with these wells.

- Constructing 96 feet of buried water line from one well pad to an existing line and eventually converting the host well to injection.

In order to facilitate present and future water injection capabilities at existing well pad locations, one water pipeline would be buried in a 4-5' deep trench leading from five well pads to existing or proposed infrastructure. The pipeline would consist of a 3" steel water injection line and a 3" water return line. It would be buried within a15-foot wide corridor next to an existing road in a trench excavated by with a trencher or backhoe. The trench would be as close to the road as possible to minimize surface disturbance, but might be located anywhere within the 15' corridor depending on terrain. Pipeline disturbance areas will be reclaimed within 120 days for the date of construction, weather permitting. Surface reclamation of the disturbance areas will be completed by: 1) recontouring the surface to approximate natural contours and spreading topsoil over disturbed areas. 2) broadcasting an appropriate seed mix over the topsoil in the fall time period of August 1 to groundfreezing and 3) crimping the seed into the topsoil with a dozer or other tracked heavy equipment to plant the seed. Alternatively, the seed may be mechanically drilled into the soil or broadcast and worked into the soil with a harrow (Newfield 2008).

No clearing or grading along the pipeline corridors would occur unless the terrain requires it.

To increase the ultimate recovery of hydrocarbon resources, Newfield would use waterflooding technology on the host pad well associated with the proposed water pipelines. The conversion of the well to an injection well would occur shortly after installation of the proposed water pipelines.

During the injection well conversion process, oil production equipment (anchor, sucker rods, pump jacks, well head valves, flow lines, treater, water tank, and oil tanks) are removed from the well pad. A packer is installed on the end of the tubing and set no more than 100 feet above the top perforation. Pressure monitoring gauges are installed on the wellhead and casing annulus to monitor the casing pressure and the pressure at which water is injected.

The water injection line would be installed to connect an existing pipeline network to individual wells to provide water to triplex injection pumps. The waterflood injection well would be equipped with flow meters and choke valves to regulate injected water volumes. After the water injection pipeline is installed, pressurized water would be injected into the oil-bearing formation.

Water Supply

Newfield anticipates that water would be used for dust suppression during construction and operational activities for a small percentage of the proposed project. Use of water for dust suppression would typically be performed under hot, windy, and/or dry conditions, and would depend on soil types and the moisture content of soils where activities are taking place. Dust suppression would most commonly be implemented during the summer months. Water-based dust abatement would be implemented using standard commercial water trucks, which hold approximately 130 barrels (bbls) of water (0.017 acre-feet).

Newfield assumes that approximately 1,000 bbls (0.13 acre-feet) of water would be needed annually for dust suppression per well pad and associated access road during project operation. Based on these assumptions, Newfield would use approximately 0.39 acre-feet of water per year for dust abatement during production, or a total of 7.8 to 11.7 acre-feet of water for dust suppression during operations over the 20 to 30 year life of the project. All or part of this water usage was probably disclosed/accounted for when analyzing impacts for drilling the host wells.

Typically, 13,500 bbls (1.75 acre-feet) of water would be required to drill and complete an individual well, for a total of 8.75 acre feet. Water wells will not be drilled on the leases. Water for drilling the proposed wells would come from an underground water well (Johnson Water District - Water Right 43-10136), Neil Moon Pond (Water Right 43-11787), Tributary to Pleasant Valley Wash (Maurice Harvey Pond - Water Right 47-1358), or the Green River (Newfield Collector Well - Water Right 47-1817). Water would be hauled by a licensed trucking company. Approximately 75 to 100 barrels, or approximately 0.01 acre-feet, of water per day would be required for the waterflood injection well under the Proposed Action. Based on the requirement of 0.01 acre-feet of water per day, the annual water requirement for the waterflooding operations would require approximately 3.65 acre-feet of water per year, or about 1,826 to 2739 acre-feet of water over the 20 to 30 year operational life of the existing wells.

The water required for this process would come from approximately half recycled produced water and half fresh water. Based on the requirement of 3.65 acre-feet of water per year, the water requirement for the waterflooding operations would require approximately about 73 to 109.5 acre-feet of water over the 20 to 30 year operational life of the existing wells.

PRODUCED WATER DISPOSAL

Upon completion of a productive well, all produced water would be confined to a steel storage tank. If the production water meets water quality standards, it would then be transported to the Ashley, Monument Butte, Jonah, South Wells Draw, or Beluga water injection facilities by company or contract trucks. The produced water would then be injected into approved Class II wells to enhance Newfield's secondary recovery water flood project. Water not meeting water quality standards would be disposed of at Newfield's Pariette No. 4 disposal well (Section 7, T. 9 S., R. 19 E.). Federally approved surface disposal facilities or at State of Utah approved surface disposal facilities.

NOXIOUS WEEDS

Newfield Production will control noxious weeds along rights-of-way for roads, pipelines, well sites or other applicable facilities.

WASTE MANAGEMENT

All Wells:

The existing pit will receive the processed drill cutting (wet sand, shale & rock) removed from the wellbore during drilling operations. The pit would be lined with 16 mil (minimum) thickness polyethylene nylon reinforced liner material. The liner(s) would overlay straw, dirt and/or bentonite if rock is encountered during excavation. The liner would overlap the pit walls and be covered with dirt and/or rocks to hold them in place. No trash, scrap pipe, or other materials that could puncture the liner would be discarded in the pit, and a minimum of two feet of free board would be maintained between the maximum fluid level and the top of the pit at all times.

The pit will be of sufficient size to contain all cuttings and drilling fluids generated in the drilling process.

A portable toilet will be provided for human waste.

A trash basket will be provided for garbage (trash) and hauled away to an approved disposal site at the completion of the drilling activities.

During the drilling and completion of the wells Newfield would not use, store transport or dispose 10,000 lbs annually of any of the hazardous chemicals contained in the Environmental Protection Agency's consolidated list of chemicals subject to reporting under Title III Superfund Amendments and Reauthorization Act (SARA) of 1986. Newfield also guarantees that during the drilling and completion of the referenced well, Newfield will use, produce, store, transport or dispose less that the threshold planning quantity (T.P.Q.) of any extremely hazardous substances as defined in 40 CFR 355.

Final Reclamation of Well Locations at the End of Project Life –

At such time as the well is plugged and abandoned, the operator shall submit a subsequent report of abandonment and the State of Utah will attach the appropriate surface rehabilitation conditions of approval.

ALTERNATIVE B NO ACTION

Under the no action alternative, the proposed wells would not be drilled.

CHAPTER 3
AFFECTED ENVIRONMENT

GENERAL SETTING

The proposed wells are located in the southern edge of Pleasant Valley, Utah. The elevation is 5,200 feet. The well pads are located adjacent to or within fallow or active agricultural areas.

AIR QUALITY

The Project Area is located in the Uinta Basin, a semiarid, mid-continental climate regime typified by dry, windy conditions, limited precipitation and wide seasonal temperature variations subject to abundant sunshine and rapid nighttime cooling. The Uinta Basin is designated as unclassified/attainment by the EPA under the Clean Air Act. This classification indicates that the concentration of criteria pollutants in the ambient air is below National Ambient Air Quality Standards (NAAQS), or that adequate air monitoring is not available to determine attainment.

NAAQS are standards that have been set for the purpose of protecting human health and welfare with an adequate margin of safety. Pollutants for which standards have been set include ground level ozone, (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and carbon monoxide (CO), and particulate matter less than 10 microns in diameter (PM_{10}) or 2.5 microns in diameter ($PM_{2.5}$). Airborne particulate matter consists of tiny coarse-mode (PM_{10}) or fine-mode ($PM_{2.5}$) particles or aerosols combined with dust, dirt, smoke, and liquid droplets. $PM_{2.5}$ is derived primarily from the incomplete combustion of fuel sources and secondarily formed aerosols, whereas PM_{10} is primarily from crushing, grinding, or abrasion of surfaces. **Table 3-1** lists ambient air quality background values for the Uinta Basin and NAAQS standards.

Table 3-1. Ambient Air Quality Background Values

Pollutant	Averaging Period(s)	Uinta Basin Background Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
SO_2	Annual	0.8[2]	--[1]
	24-hour	3.9[2]	--[1]
	3-hour	10.1[2]	1,300
	1-hour	19.0[2]	197
NO_2	Annual	8.1[3]	100
	1-hour	60.2[3]	188
PM_{10}	Annual	7.0[4]	--[6]
	24-hour	16.0[4]	150
$PM_{2.5}$	Annual	9.4[3]	15
	24-hour	17.8[3]	35
CO	8-hour	3,450[4]	10,000
CO	1-hour	6,325[4]	40,000
O_3	8-hour	100.0[3,5]	75

1 – The 24-hour and annual SO2 NAAQS have been revoked by USEPA
2 – Based on 2009 data from Wamsutter Monitoring Station Data (USEPA AQS Database)
3 – Based on 2010/2011 data from Redwash Monitoring Station (USEPA AQS Database)
4 – Based on 2006 data disclosed in the Greater Natural Buttes FEIS. (BLM, 2012)
5 – Ozone is measured in parts per billion (ppb)
6 – The annual PM10 NAAQS has been revoked by USEPA

Existing point and area sources of air pollution within the Uinta Basin include the following:

- Exhaust emissions (primarily CO, NO_x, $PM_{2.5}$, and HAPs) from existing natural gas fired compressor engines used in transportation of natural gas in pipelines;
- Natural gas dehydrator still-vent emissions of CO, NO_x, $PM_{2.5}$, and HAPs;

- Gasoline and diesel-fueled vehicle tailpipe emissions of VOCs, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$;
- Oxides of sulfur (SO_x), NO_x, fugitive dust emissions from coal-fired power plants, and coal mining/ processing;
- Fugitive dust (in the form of PM_{10} and $PM_{2.5}$) from vehicle traffic on unpaved roads, wind erosion in areas of soil disturbance, and road sanding during winter months; and,
- Long-range transport of pollutants from distant sources.

Two year-round air quality monitoring sites were established in summer 2009 near Red Wash (southeast of Vernal, Utah) and Ouray (southwest of Vernal). These monitors were certified as Federal Reference Monitors in fall of 2011, which means they can be used to make a NAAQS compliance determination. The complete EPA Ouray and Redwash monitoring data can be found at: http://www.epa.gov/airexplorer/index.htm
Both monitoring sites have recorded numerous exceedences of the 8-hour ozone standard during the winter months (January through March 2010, 2011, and 2013). It is thought that high concentrations of ozone are being formed under a "cold pool" process. This process occurs when stagnate air conditions form with very low mixing heights under clear skies, with snow-covered ground, and abundant sunlight. These conditions, combined with area precursor emissions (NO_x and VOCs), can create intense episodes of ozone. The high numbers did not occur in January through March 2012 due to a lack of snow cover. This phenomenon has also been observed in similar locations in Wyoming. Winter ozone formation is a newly recognized issue, and the methods of analyzing and managing this problem are still being developed. Existing photochemical models are currently unable to reliably replicate winter ozone formation. This is due to the very low mixing heights associated with unique meteorology of the ambient conditions. Further research is needed to definitively identify ozone precursor sources that contribute to observed ozone concentrations.

The 2005 Castlepeak-Eightmile Flat EIS analyzed air quality impacts, including estimates of VOC and NO_x emissions for existing and future activities in the Greater Monument Butte Unit. A VOC and NO_x emissions inventory of Newfield's existing operations was completed to determine if emissions associated with current and near future infrastructure, drilling, and production is within the scope of the Castlepeak and Eightmile Flat EIS. As shown in **Table 3-2** below, due to changing technology the current emissions for the Greater Monument Butte Unit are within the scope of the referenced EIS.

Table 3-2. Castlepeak-Eightmile Flat EIS Emissions vs. Current Emissions

Source	Source Subset	VOC Emissions (tons per year)	NOx Emissions (tons per year)
EIS Predicted Emissions	Existing Permitted Infrastructure	108	230
	Drilling[1]	45	568
	Production	1,037	4,311
	Total	**1,190**	**5,109**

Infrastructure Emissions	Current	57	202
	Proposed to 2014	18	80
	Total	**75**	**282**
Drill Rig Emissions	**Total**	**29**	**129[2]**
Production Emissions	Pumpjack Engines[3]	125	1,003
	Natural Gas Fueled Burners	59	488
	Stock Tanks	557	--
	Total	**741**	**1,491**
Total Current Emissions		**845**	**1,902**

[1]Assumed six Tier 0 rigs drilling 130 wells per year at an engine load factor of 0.47.
[2]Assumes three Tier II rigs drilling 200 wells per year at an engine load factor of 0.47.
3Based upon 1.8 tons per year NOx and 0.58 tons per year VOC per engine.

The UDAQ conducted limited monitoring of $PM_{2.5}$ in Vernal, Utah in December 2006. During the 2006-2007 winter seasons, $PM_{2.5}$ levels were higher than the $PM_{2.5}$ health standards that became effective in December 2006. The $PM_{2.5}$ levels recorded in Vernal were similar to other areas in northern Utah that experience wintertime inversions. The most likely causes of elevated $PM_{2.5}$ at the Vernal monitoring station are those common to other areas of the western U.S. (combustion and dust) plus nitrates and organics from oil and gas activities in the Basin. $PM_{2.5}$ monitoring that has been conducted in the vicinity of oil and gas operations in the Uinta Basin by the Red Wash and Ouray monitors beginning in summer 2009 have not recorded any exceedences of either the 24 hour or annual NAAQS.

HAPs are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethylbenzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane). There are no applicable Federal or State of Utah ambient air quality standards for assessing potential HAP impacts to human health.

Greenhouse Gases

Greenhouse gases keep the planet's surface warmer than it otherwise would be. However, as concentrations of these gases increase the Earth's temperature is climbing above past levels. According to NOAA and NASA data, the Earth's average surface temperature has increased by about 1.2 to 1.4° F in the last 100 years. The eight warmest years on record (since 1850) have all occurred since 1998, with the warmest year being 1998. However, according to the British Meteorological Office's Hadley Centre (BMO 2009), the United Kingdom's foremost climate change research center, the mean global temperature has been relatively constant for the past nine years after the warming trend from 1950 through 2000. Predictions of the ultimate outcome of global warming remain to be seen.

The analysis of the Regional Climate Impacts prepared by the U.S. Global Change Research Program (USGCRP) in 2009 suggests that recent warming in the region (including the project area) was nationally among the most rapid. Past records and future projections predict an overall increase in regional temperatures, largely in the form of warmer nights and effectively higher average daily minimum temperatures. They conclude that this warming is causing a decline in spring snowpack and reduced flows in the Colorado River. The USGCRP projects a region-wide decrease in precipitation, although with substantial variability in interannual conditions. For eastern Utah, the projections range from an approximate 5 percent decrease in annual precipitation to decreases as high as 40 percent of annual precipitation.

PRIME AND UNIQUE FARMLANDS

Most irrigated farm ground qualifies as Prime and Unique Farmlands. The reserve pit for the H-21-8-17 abuts the path of the landowners pivot line. The APD states that the well would be drilled and the pit reclaimed by the next cultivating season, however, the drilling schedule provided by Newfield on October 23 indicates well would not be drilled until mid-March-too late to reclaim the pit before the cultivation season.

THREATENED AND ENDANGERED ANIMAL SPECIES

Colorado River Fish Species:

The USFWS has identified four federally listed fish species historically associated with the Upper Colorado River Basin, including the Green River, as being within the project area: Colorado pikeminnow (Ptychocheilus lucius), humpback chub (Gila cypha), bonytail (Gila elegans), and razorback sucker (Xyrauchen texanus). These fish are federally and state-listed as endangered and have experienced severe population declines due to flow alterations, habitat loss or alteration, and introduction of non-native fish species. The Green River and its 100-year floodplain have been designated Critical Habitat for these four endangered fish species (USFWS 1994).

CHAPTER 4
ENVIRONMENTAL EFFECTS

DIRECT AND INDIRECT EFFECTS

AIR QUALITY

This Proposed Action is considered to be a minor air pollution source under the Clean Air Act and is not controlled by regulatory agencies. At present, control technology is not required by regulatory agencies since the Uinta Basin is designated as unclassified/attainment. The Proposed Action would result in different emission sources associated with two project phases: well development and well production. Annual estimated emissions from the Proposed Action are summarized in **Table 4-1**.

Table 4-1. Proposed Action Annual Emissions (tons/year) [1]

Pollutant	Development	Production	Total
NO_x	17.36	4.87	22.23
CO	5.51	9.17	14.68
SO_x	1.66	9.17	10.83
PM_{10}	0.09	0.02	0.11
$PM_{2.5}$	2.03	27.15	29.18
VOC	0.51	3.00	3.51
Benzene	0.01	0.02	0.03
Toluene	0.00	0.01	0.02
Ethylbenzene	0.00	0.00	0.00
Xylene	0.00	0.00	0.00
n-Hexane	0.00	0.01	0.01
Formaldehyde	0.00	0.20	0.20

[1] Emissions include 5 producing well(s) and associated operations traffic during the year in which the project is developed.

Well development includes NO_x, SO_2, and CO tailpipe emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. Fugitive dust concentrations would occur from vehicle traffic on unpaved roads and from wind erosion where soils are disturbed. Drill rig and fracturing engine operations would result mainly in NO_X and CO emissions, with lesser amounts of SO_2. These emissions would be short-term during the drilling and completion phases.

During well production, continuous NO_x, CO, VOC, and HAP emissions would originate from well pad separators, condensate storage tank vents, and daily tailpipe and fugitive dust emissions from operations traffic. Road dust (PM_{10} and $PM_{2.5}$) would also be produced by vehicles servicing the wells.

Under the proposed action, emissions of NO_x and VOC, ozone precursors, are 4.45 tons/yr for NO_x, and 0.70 tons/yr of VOC (**Table 4-1**). Emissions would be dispersed and/or diluted to the extent where any local ozone impacts from the Proposed Action would be indistinguishable from background conditions.

The primary sources of HAPs are from oil storage tanks and smaller amounts from other production equipment. Small amounts of HAPs are emitted by construction equipment. These emissions are estimated to be minor and less than 1 ton per year.

Emission offsets from well conversions

Once the water pipelines are installed, the existing wells on the well pads will be converted to waterflood injection wells and connected to the water pipeline network. Water pipeline installation includes emissions from earth-moving equipment and vehicle traffic. NO_X, SO_2, and CO would be emitted from vehicle tailpipes. Fugitive dust concentrations would increase with additional vehicle traffic on unpaved roads and from wind erosion in areas of soil disturbance. During the well conversion process, the wells will no longer produce and oil and gas production equipment from the well sites will be removed resulting in a reduction of NO_X, CO, VOC, GHG, and HAP emissions as described in Table 4.2. Equipment that will be removed includes:

separators, storage tanks, pumping units, and heaters. Additionally, a reduction in fugitive dust and tailpipe emissions will occur due to the reduction of oil and gas operations vehicle traffic.

Table 4-2 Proposed Action Annual Emissions (tons/year) [1]			
Pollutant	**Pipeline Installation**	**Well Conversion**	**Total**
NO_X	0.00	-0.92	-0.92
CO	0.00	-1.72	-1.72
VOC	0.00	-1.62	-1.62
SO_2	0.00	0.00	0.00
PM_{10}	0.06	-6.52	-6.46
$PM_{2.5}$	0.01	-0.71	-0.70
Benzene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00
Xylene	0.00	0.00	0.00
n-Hexane	0.00	0.00	0.00
Formaldehyde	0.00	-0.04	-0.04

[1] Emissions include installation of 1 water pipeline segments and conversion of 1 existing well to waterflood injection wells during the year in which the project occurs

Greenhouse Gases

The assessment of greenhouse gas emissions and climate change remains in its earliest stages of formulation. Applicable EPA rules do not require any controls and have yet to establish any emission limits related to GHG emissions or impacts. The lack of scientific models that predict climate change on regional or local level prohibits the quantification of potential future impacts of decisions made at the local level, particularly for small scale projects such as the Proposed Action. Drilling and development activities from the Proposed Action are anticipated to release a negligible amount of greenhouse gases into the local air-shed

Mitigation

- All internal combustion equipment would be kept in good working order.
- Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer.
- Open burning of garbage or refuse would not occur at well sites or other facilities.
- Drill rigs would be equipped with Tier II or better diesel engines
- Low bleed pneumatics would be installed on separator dump valves and other controllers.
- During completion, not venting would occur, and flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible.
- Telemetry will be installed to remotely monitor and control production.
- When feasible, two or more rigs (including drilling and completion rigs) will not be run simultaneously within 200 meters of each other. If two or more rigs must be run

simultaneously within 200 meters of each other, then effective public health buffer zones out to 200 meters (m) from the nearest emission source will be implemented. Examples of an effective public health protection buffer zone include the demarcation of a public access exclusion zone by signage at intervals of every 250 feet that is visible from a distance of 125 feet during daylight hours, and a physical buffer such as active surveillance to ensure the property is not accessible by the public during drilling operations. Alternatively, the proponent may demonstrate compliance with the 1-hour NO2 National Ambient Air Quality Standards (NAAQS) with appropriate and accepted near-field modeling. As part of this demonstration, the proponent may propose alternative mitigation that could include but is not limited to natural gas–fired drill rigs, installation of NOX controls, time/use restrictions, and/or drill rig spacing.

- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horse power must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 grams of NOx per horsepower-hour.
- Green completions would be used for all well completion activities where technically feasible.
- Enhanced VOC emission controls with 95% control efficiency would be employed on production equipment having a potential to emit greater than 5 tons per year.

Possible dispersed direct and indirect negative impacts which may result from implementation of the Proposed Action include: loss of suitable habitat, loss of habitat and forage opportunities for pollinators of the species, habitat modification by invasive weed species which may compete with individuals, accidental spray or drift of herbicides used during invasive plant control, and the deposition of fugitive dust from construction activities and vehicle traffic on unpaved roads. Due to these indirect negative impacts the Proposed Action warrants a ***"may affect, is not likely to adversely affect"*** determination for Pariette and Uinta Basin hookless cactus. The proposed project is within the scope of Section 7 Consultation completed for Newfield's Infield Development Project. Therefore, consultation on this project has already been completed.

PRIME AND UNIQUE FARMLANDS

Failure to reclaim the pit in time for the cultivation/irrigation season would result in the landowner being unable to utilize the pivot for the season, forcing the field to go fallow.

Mitigation:

If drilling the H-21-8-17 does not commence by January 15, 2014, the well must be drilled using closed loop technology.

USFWS THREATENED AND ENDANGERED ANIMAL SPECIES

Colorado River Fish Species

The Proposed Action would result in up to 1.75 acre-feet of water depletion from removal of water from the Upper Colorado River Drainage System for construction and drilling operations and road maintenance. Decreased stream-flows impact aquatic habitat

and fish populations by reducing, or eliminating both the extent and quality of suitable habitat by increasing stream temperatures, and subsequently, by reducing dissolved oxygen levels. Such impacts may be more pronounced during periods of natural cyclic flow reductions during fall and winter or during summer months during periods of drought. A loss of streamflow can also reduce a stream's ability to transport sediment downstream and result in an increase deposition which, in turn, can impact the numbers and diversity of benthic macro invertebrates and ultimately, aquatic habitat. Eroded material may be delivered to streams as fine sediment and deposited in channels or transported downstream. The actual amount of sediment from these land disturbing activities that reaches stream channels or still water bodies would be a result of numerous factors including the location of roads, number of road/stream crossings, slope steepness and length, amount of exposed soil, type of vegetation in the area, frequency and intensity of rainfall, soil type and the implementation and effectiveness of BMPs. Sediment loads, above background levels, can reduce pool depths, bury stream substrates and spawning gravels, adhere to aquatic insects and the gills of fish, alter channel form and function, and result in other forms of habitat degradation. Improperly placed, shaped, and sized culverts in roads can also act as fish barriers on key streams or exacerbate erosion and cause headcutting. Elevated salinity levels, over extended periods of time, may become toxic for aquatic ecosystems and fish species, including Colorado River Endangered Species.

This depletion will be mitigated through payment of a depletion fee to the U.S. Fish and Wildlife Service, which uses the monies from depletion fees paid to acquire water rights and return water to the river system.

As well as being impacted by water depletion, endangered larval fish are very small (0.5 inches total length) and incapable of directed swimming from the time of hatching through the first 2-4 wks of their life. Depending on the water year, larval fish may be present in the Green, Colorado, Gunnison and Yampa Rivers from as early as April 1 to as late as August 31 (earlier in dry years; later in wet years). Pumping water directly from any of the rivers could result in entrainment and death of larval fish.

Mitigation:

1. The best method to avoid entrainment is to pump from an off-channel location – one that does not connect to the river during high spring flows. An infiltration gallery constructed in a service approved location is best.

2. If the pump head is located in the river channel the following stipulations apply:
    a. Do not situate the pump in a low-flow or no-flow area as these habitats tend to concentrate larval fishes.

    b. Limit the amount of pumping, to the greatest extent possible, during that period of the year when larval fish may be present (April 1 to August 1).

    c. Limit the amount of pumping, to the greatest extent possible, during the midnight hours (10pm to 2 am), as larval drift studies indicate that this is a

period of greatest daily activity. Dusk is the preferred pumping time, as larval drift abundance is lowest during this time.

3. Screen all pump intakes with 3/32" mesh material.

4. Approach velocities for intake structures should follow the National Marine Fisheries Service's document "fish screening criteria for anadromous salmonids". For projects with an in-stream intake that operate in stream reaches where larval fish may be present, the approach velocity should not exceed 0.33 feet per second (ft/s).

5. Report any fish impinged on the intake screen or entrained into irrigation canals to the service (801.975.3330) or the Utah Division of Wildlife Resources:

   Northeastern Region
   152 East 100 North, Vernal, UT 84078
   Phone: (435)781-9453

NO ACTION DIRECT AND INDIRECT EFFECTS

Air Quality

Under the No Action Alternative, the proposed gas wells would not be drilled and there would be no additional impacts to air quality. Effects on ambient air quality would continue at present levels from existing oil and gas development in the region and other emission producing sources. The host well pads would continue to exist until the wells on those pads are plugged. Dust and other emissions from the existing wells will continue at current higher levels because the liquids gathering system would not be installed.

Prime and Unique Farmlands

Under the no action alternative, there would be no effects to Prime and Unique Farmlands.

USFWS Threatened and Endangered Animal Species:

Under the no action alternative, there would be no impacts to threatened and endangered animal species.

CUMULATIVE EFFECTS

Air Quality

Air Quality and Greenhouse Gases: The cumulative impact area for air quality is the Uinta Basin, bounded on all sides by higher terrain, which results in similar climate and dispersion conditions for pollutants in the cumulative impact area. The Greater Natural

Buttes Air Quality Technical Support Document, and the Greater Natural Buttes Final EIS section 5.3.1, are incorporated by reference and summarized below. Most of the cumulative emissions in the Uinta Basin are associated with oil and gas exploration and production activities. Consequently, past, present and reasonably foreseeable wells in the Uinta Basin are a part of the cumulative actions considered in this analysis. Table 6 summarizes the 2006 Uinta Basin emissions as well as the incremental impact of this project's alternatives. As indicated in Table 4-2, the Proposed Action comprises a small percentage of the Uinta Basin emissions summary.

Table 4-2. 2006 Uinta Basin Oil and Gas Operations Emissions Summary

County	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM (tpy)	VOC (tpy)
Uintah	6,096	4,133	247	344	45,646
Carbon	995	814	22	40	2,747
Duchesne	3,053	2,448	96	173	19,019
Grand	337	207	16	22	2,360
Emery	273	199	9	14	453
Uinta Basin Total	**10,754**	**7,800**	**391**	**592**	**70,226**
Proposed Action	4.64	7.67	0.02	23	7.61
No Action	0.973	1.834	0.234	6	1.833

Source: Greater Natural Buttes Final EIS Table 5.3-1.

The GNB model predicted the following impacts to air quality and air quality related values for the GNB Proposed Action, which encompassed 3,675 new wells:

- Cumulative impacts from criteria pollutants to ambient air quality are well below the NAAQS at Class I airsheds and selected Class II areas;
- The incremental impacts to visibility would be virtually impossible to discern and would not contribute to regional haze at the Class I areas;
- The 2018 projected baseline emissions would result in impacts of 1.0 deciview for at least 201 days per year at the Class II areas;
- Discernible impacts at Flaming Gorge National Recreation Area and Dinosaur National Monument were anticipated;
- Less than 1 percent would be contributed to the acid deposition in Class I areas, and 4.3 percent at the Flaming Gorge Class II area;
- Acid deposition impacts at sensitive lakes would be below the USFS screening threshold; and,
- Ozone levels would be below the current ozone standard of 75 parts per billion (ppb) for the fourth highest annual level in the Uinta Basin for the 2018 projected baseline, and the proposed action would be approximately 3.2 percent of the cumulative ozone impact within the Uinta Basin.

Based on the GNB model results, it is anticipated that the impact to ambient air quality and air quality related values associated with the Proposed Action would be indistinguishable from, and dwarfed by, the margin of uncertainty associated with the model and Uinta Basin emission inventory. The No Action alternative would not result in an accumulation of impacts.

Prime and Unique Farmlands

The CIAA is the private surface lands within the GMBU. Examination of aerial photos indicate that approximately eight well pads encroach upon irrigated farmlands, directly impacting about 1-2% of the total cultivated acreage.

USFWS Threatened and Endangered Fish Species

Colorado River Fish Species

The cumulative impacts analysis area for this resource is the Colorado River system. Cumulative impacts in this area include oil and gas exploration and development, irrigation, urban development, recreational activities, and activities associated with the Upper Colorado River Endangered Fish Recovery Program. Cumulative impacts such as decreased water quality and quantity, decreased habitat quality, habitat fragmentation, and mortality result from decreased stream flow, erosion, improperly placed culverts, elevated salinity, and contamination. Decreased stream-flows reduce or eliminate both the extent and quality of suitable habitat by increasing stream temperatures, and subsequently by reducing dissolved oxygen levels. Such impacts may be more pronounced during periods of natural cyclic flow reductions (fall and winter or periods of drought). A loss of streamflow can also reduce a stream's ability to transport sediment downstream. Sediment amount is influenced by the number of road/stream crossings, bank slope, amount of exposed soil, type of vegetation in the area, frequency and intensity of rainfall, soil type (amount of salinity), soil contamination, and the implementation and effectiveness of erosion control measures. Sediment loads above background levels can reduce pool depths, bury stream substrates and spawning gravels, adhere to aquatic insects and the gills of fish, alter channel form and function, and result in other forms of habitat degradation. Elevated salinity levels, over extended periods of time, may become toxic for aquatic ecosystems and fish species. In addition, improperly placed, shaped, and sized culverts in roads can act as fish barriers on key streams or exacerbate erosion and cause headcutting.

The No Action Alternative would not result in an accumulation of impacts

CHAPTER 5
TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

Well	Onsite Date	Landowner Attendance	Surface Owner	Surface Owner Agreement Signed
O-21-8-17	12/20/2012	No	Brad and JoAnn Nelson Family Trust Lee and Louise Nelson Family Trust	September 25, 1984
L-20-8-17				
H-21-8-17	12/20/2012	No	Wade J. Price	November 3, 1997

O-22-8-17 J-21-8-17	12/20/2012	No	John H Price and Brenda P. Price	July 24, 1998

CHAPTER 6
LIST OF PREPARERS

Table 3: List of Preparers		
Name	*Title*	*Responsibilities*
Sheri Wysong	Physical Scientist	Team Lead/Air Quality Environmental Justice/Migratory Birds/Threatened and Endangered Species

CHAPTER 7
REFERENCES CITED

- British Meteorological Office (BMO). 2009. British Meteorological Office's Hadley Centre,2009. Accessed January 2009 at http://www.metoffice.gov.uk/climatechange/science/monitoring/.
- BLM 2008. *BLM National Environmental Policy Act Handbook H-1790-1*, Appendix 1.
- Bureau of Land Management (BLM). 2005. *Final Environmental Impact Statement and Record of Decision for the Castle Peak and Eight Mile Flat Oil and Gas Expansion Project, Newfield Rocky Mountains, Inc., Uintah and Duchesne Counties, Utah.* U.S. Department of the Interior, Bureau of Land Management, Vernal District Office.
- Bureau of Land Management (BLM). 2011. *Newfield Production Company 20-acre Infill Development Program. Biological Assessment* U.S. Department of the Interior, Bureau of Land Management, Vernal District Office.
- BLM. 2012. *Final Environmental Impact Statement for the Greater Natural Buttes*
- Federal Register. 2007. Onshore Oil and Gas Operations; Federal and Indian Oil and Gas Leases; Onshore Oil and Gas Order Number 1, Approval of Operations; Final Rule [43 CFR 3164.1 & 43 CFR 3162.3-1 & 43 CFR 3165.3(b)
- Newfield. 2009. *Newfield Exploration Company Castle Peak and Eight Mile Flat Reclamation and Weed Management Plan.*
- U.S. Fish and Wildlife Service. (USFWS). 1994. Final Rule: Determination of critical habitat for the Colorado River endangered fishes: Razorback sucker, Colorado squawfish, humpback chub, and bonytail chub. Federal Register 59: 13375-13400.