Sensitive Area Determination Checklist

WPX Energy Rocky Mountain, LLC (WPX)		
Person(s) Conducting Field Inspection	Ashlee Lane	07/17/12
Site Information		
Location:	Smith Gulch Frac Pad	Time: 1300
Type of Facility:	Proposed Frac Pad	
Environmental Conditions	Clear and calm; soil conditions are dry.	
Temperature (°F)	90°	

Has the proposed, new or existing location been designated as a sensitive area?
☐ Yes ☒ No

SURFACE WATER

1. Are there any surface water features or SWSAs adjacent to or within ¼ mile of the proposed/new or existing facility?
   ☒ Yes ☐ No

   If yes, list type of surface water feature(s), i.e. rivers, creeks, streams, seeps, springs, wetlands: Smith Gulch, a USGS identified intermittent drainage; and, one USGS identified unnamed intermittent drainage.

   If yes, describe location relative to facility: Smith Gulch is located approximately 850 feet to the west and, the unnamed intermittent drainage is 216 feet to the east.

2. Could a potential release from the facility reach surface water features?
   ☒ Yes ☐ No

   If yes, describe the pathway a release from the facility would likely follow to determine if the potential to impact surface water is high or low. A potential release, if it were to migrate off the facility, would tend to follow the topographical relief of the area which slopes to the south, southeast directly towards the unnamed ephemeral drainage.

3. Is the potential to impact surface water from a facility release high or low?
   ☒ High to actual surface water features ☒ Low to actual flowing surface water

WPXENERGY

GROUNDWATER

1. Will the proposed/new or existing facility have any pits which will contain hydrocarbons and chlorides or other E&P wastes?
   ☐ Yes ☒ No
   If yes, List the pit type(s): The facility will include the necessary equipment for hydraulic fracturing.

2. Is the site of the proposed facility underlain by an unconfined aquifer or recharge zone?
   ☐ Yes ☒ No

3. Is the hydraulic conductivity of the underlying soil or geologic material ≤ $1.0x10^{-7}$ cm/sec?
   ☒ Yes ☐ No

4. Is the proposed facility located within 1/8 mile of a domestic water well or 1/4 mile of a public water supply well which would use the same aquifer?
   ☐ Yes ☒ No

5. Is the proposed facility located within a 100 year floodplain?
   ☐ Yes (*Sensitive Area*) ☒ No (*If no, proceed to question #6.*)

6. Is the depth to groundwater known?
   ☐ Yes (*If yes, follow instructions provided in 6(a) of this section).*
   ☒ No (*If no, follow instructions provided in 6(b) of this section*).

   (a) If yes, could a potential release from the proposed facility reach groundwater?
   ☐ Yes ☐ No
   If yes, explain:

   (b) If no:
   (i) Evaluate surrounding soils, topography, and vegetation which may suggest the presence of shallow groundwater.
   (ii) Gather information from surrounding well data in order to determine a depth to groundwater, i.e. State Engineers Office.

7. Is the potential to impact ground water from the facility in the event of a release high or low?
   ☐ High ☒ Low

Additional Comments:

As stated in the surface water section of this sensitive area determination, the unnamed USGS intermittent drainage is located approximately 216 feet to the east of the proposed facility. The facility, as it is currently proposed, would limit the direction of a potential release to the fill slope edges of the facility on the northeastern and a small portion of the southeastern sides. If a potential release were to migrate off the facility, flow would be directly towards the unnamed intermittent drainage. It is not anticipated Smith Gulch would impacted by a potential release from the proposed facility. There is a ridgeline separating the proposed facility from Smith Gulch. Based on the close proximity of the unnamed intermittent drainage, it would be recommended Best Management Practices (BMPs) be installed along the fill slope sides of the proposed facility. The BMPs should be in the form of an earthen perimeter berm around the graded edge of the facility and a diversion ditch, if feasible, along the toe of the fill slope sides. These BMPs should be monitored and maintained to ensure site containment in the event of a potential release.

The State Engineer's Office and USGS records were reviewed and no records were revealed that would provide additional information pertaining to the depth to groundwater. The vegetation in the area consists of Greasewood and Sage Brush. There is a lone Cottonwood tree roughly 1,000 feet south of the well pad. Though water was not seeping out of the hill side during the site investigation, salt remnants were visible on the south east corner of the hill side indicating the presence of a seep. In reviewing the geologic setting of the proposed facility it does not appear there is any hydraulic connectivity between the proposed facility and the above noted seep.

Based on the information collected during the site investigation and desktop review, the potential to impact actual surface water features has been deemed high. The unnamed intermittent drainage is less than 500 feet from the proposed facility and by COGCC decision would classify the facility as being in a sensitive area. However, the drainage exhibits ephemeral characteristics in the immediate vicinity of the proposed facility and terminates in a retention pond approximately ¼ mile to the southeast. Any potential flow collects and/or evaporates before exiting the culverts under I-70 leading to the Colorado River. Therefore the potential to impact live surface water has been deemed low. With the potential to impact live surface water and groundwater deemed to be low the facility can be designated as being in a non-sensitive area.

Inspector Signature(s): _____ Date: 7/19/2012

Mark E. Mumby, *Project Manager/RPG*
HRL Compliance Solutions, Inc.

_____ Date: 7/18/2012

Ashlee Lane, *Biologist*
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