

Sensitive Area Determination Checklist

WPX Energy Rocky Mountain, LLC (WPX)		
Person(s) Conducting Field Inspection	Alexander Nees <i>Environmental Scientist</i>	July 4, 2013
Site Information		
Location:	MV 28-4	Time: 6:30AM
Type of Facility:	Existing well pad expansion	
Environmental Conditions		
Clear, calm, dry soil		
Temperature (°F)	62	

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: Riley Gulch, a USGS identified intermittent drainage and One (1) unnamed USGS identified intermittent drainage which is tributary to Riley Gulch.

If yes, describe location relative to facility: Riley Gulch is located approximately 958 feet to the east and the unnamed USGS identified intermittent drainage is located 171 feet to the south southwest of the existing facility.

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 on the southwestern side, would flow to the southwest directly towards and into the unnamed intermittent drainage.

3. Is the potential to impact surface water from a facility release high or low?

High Low

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: Cuttings will transported off-site
 If yes, List the pit type(s):

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 $\leq 1.0 \times 10^{-7}$ 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, there is one (1) unnamed USGS identified intermittent drainage located 171 feet to the south; and Riley Gulch a USGS identified intermittent drainage located approximately 958 feet to the east of the proposed facility expansion. The facility, as it is currently proposed to be expanded, limits the direction of a potential release to the southwestern side. If a potential release were to migrate off the facility, flow would migrate down a very steep embankment directly towards and into the unnamed intermittent drainage. During facility expansion, Best Management Practices BMP's should be installed in the form of an earthen perimeter berm along the graded edge of any fill slope sides, especially along the southwestern edge. If feasible, a diversion ditch should be constructed along the toe of the fill slope on southwestern side as well. All BMP's should be monitored and maintained to ensure site containment in the event of a release.

The State Engineers Office and USGS records were reviewed and no records were revealed which could provide additional information pertaining to the depth of groundwater in the immediate vicinity of the facility. The topographic setting of the proposed facility expansion lies primarily in unweathered bedrock (Wasatch Fm.) situated on a fairly steep hillside. There was no evidence of any springs or seeps observed below the existing facility. The channel of Riley Gulch is approximately 100 feet below the facility surface which would suggest that any perennial sub surface water would most likely be in Riley Gulch. Therefore it could be assumed that the depth to groundwater in the immediate vicinity of the facility would be 100 feet or greater.

Based on the information collected during the site visit and desktop review, the greatest potential for impacts would be to the unnamed intermittent drainage located 171 feet to the south southwest of the proposed facility expansion. As noted above, if a potential release were to migrate off the southwestern side of the facility flow would migrate down a steep embankment, and due to the steepness, flow would not tend to infiltrate into any of the underlying soils. Therefore, flow would easily enter the unnamed intermittent drainage which is tributary to Riley Gulch. The unnamed intermittent drainage shows indications of seasonal surface flow (most notably the presence of Tamarisk in the drainage). A potential release if it were to impact this drainage would tend to migrate fairly quickly down channel, due to the steep channel gradient, and enter Riley Gulch. Riley Gulch is identified by the USGS as an intermittent drainage; however, the vegetation displays characteristics more typical of perennial drainages. Riparian vegetation consists of a dense over story of narrow leaf cottonwood (*Populus angustifolia*) and an herbaceous understory that includes hydrophytic species such as milkweed (*Asclepias speciosa*) and scouring rush (*Equisetum hyemale*). The drainage channel is well-defined and characteristic of consistent surface flows. These factors also suggest that there is, at a minimum, perennial subsurface water in Riley Gulch. In addition, by COGCC decision, the close proximity of the unnamed intermittent drainage would classify the facility as being in a sensitive area. If a potential release were to impact the intermittent drainage during periods of flow, Riley Gulch

and potentially Parachute Creek could be impacted as well. As noted above, the potential to impact groundwater in the immediate vicinity of the proposed facility expansion would be deemed as low. However, with the high potential for impacts to the unnamed intermittent drainage, Riley Gulch, and potentially Parachute Creek during periods of intermittent flow, the facility should be designated as being in a sensitive area.

Inspector Signature(s):  Date: 11/1/2013

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 Date: 7/10/2013

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