

## Sensitive Area Determination Checklist

WPX Energy Rocky Mountain, LLC (WPX)		
<b>Person(s) Conducting Field Inspection</b>	Alexander Nees <i>Environmental Scientist</i>	02/05/14
<b>Site Information</b>		
Location:	Nolte 14-44	Time: 0915
Type of Facility:	Proposed well pad expansion	
<b>Environmental Conditions</b>	Light overcast, calm wind	
Approx. 4" of fresh snow on the ground, soil frozen		
Temperature (°F)	10°	

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: Two (2) unnamed USGS identified intermittent drainages

If yes, describe location relative to facility: One (1) unnamed USGS identified intermittent drainage is located 180' to the east-northeast; one (1) unnamed USGS identified intermittent drainage is located 295' to the northeast 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. If a potential release were to migrate off the facility, flow would be to the east southeast and could enter the unnamed intermittent drainage feature.

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

High to actual surface water features       Moderate to actual flowing surface water

## 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): Cuttings trench on the southwest corner of the facility.
  
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 portion of this sensitive area determination, there are two (2) unnamed USGS identified intermittent drainages within a ¼ mile of the proposed facility. The facility, as it is currently constructed and proposed to be expanded, limits the direction of a potential release to the eastern and southeastern sides. If a potential release were to migrate off the facility, flow would be to the east southeast where it would tend to pool in the topographical low between the facility fill slope and the elevated bed of the adjacent railroad. If a large release were to occur, flow would then migrate to the northeast, following a very shallow gradient until it entered the channel of the unnamed USGS identified drainage located 180 feet to the northeast. From this point, flow would cross under the railroad tracks and migrate approximately 1,600' to the east before entering the Colorado River. It is not anticipated the second unnamed USGS identified intermittent drainage would be impacted by a potential release as it reaches a confluence with the first unnamed drainage at an elevation higher than that of the existing facility.

During facility expansion, Best Management Practices (BMPs) should be installed in the form of an earthen perimeter berm along the graded edge of all fill slope sides. If feasible, a diversion ditch should be constructed along the toe of all fill slope sides as well. This will greatly aid in slowing the migration of any potential release away from the facility, greatly reducing the potential for impacts to the Colorado River. All installed BMPs should be monitored and maintained to ensure site containment in the event of a release.

The State Engineer's Office and USGS records were reviewed and revealed no water wells are located within a ¼ mile of the proposed facility. The nearest water well (permit number 279296) is located 2,428' south southeast of the facility on the opposite side of the Colorado River. The depth to groundwater is noted to be 16'. The well is located in the Colorado River floodplain, approximately 45' lower in elevation than that of the existing facility. Therefore it could be assumed that the depth to groundwater would be at least 45' if not greater in the immediate vicinity of the proposed facility. The topography of the general area is sloping gently to the south and is dominated by xeric vegetation typical of the elevation and location (rabbitbrush, greasewood, and herbaceous species typical of reclamation seed mixes such as western wheatgrass) which would not suggest the presence of shallow groundwater. The channel of the unnamed drainage displayed similar vegetation (rabbitbrush, greasewood, sagebrush, and scattered junipers) wherever the surface was not scoured to bare soil and rock. The drainage displays clear indications of significant surface flow at times, including a well-defined and scoured channel and vegetation matted with flood debris. However, no hydrophytic species such as tamarisk, cottonwood, or willow were observed, which indicates that the drainage only carries surface water originating from elevated topography to the north, and does not have any connection to more permanent sources of groundwater.

Based on the information collected during the site visit and desktop review, the potential to impact groundwater has been deemed as being low as noted above. The greatest potential for impacts would be to the unnamed intermittent drainage located to the east of the existing facility. The unnamed drainage in the immediate vicinity of the proposed facility, exhibited channel characteristics of intermittent flow, and by COGCC decision its close proximity would classify this facility being located in a sensitive area. If a potential release were to reach the unnamed drainage during a period of surface flow, it would quickly migrate down channel and potentially enter the Colorado River which is located 1650' to the east. However, as noted above, if adequate (BMPs) are installed and maintained during expansion construction and operation the potential for impacts to the intermittent drainage and the Colorado River would be substantially reduced. With the moderate risk of impacts to the drainage and potentially the Colorado River, during periods of flow, the facility should be designated as being in a sensitive area.

Inspector Signature(s):  Date: 2/7/2014

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

 Date: 2/5/2014

Alexander Nees, *Environmental Scientist*  
HRL Compliance Solutions, Inc.