

## Sensitive Area Determination Checklist

WPX Energy Rocky Mountain, LLC (WPX)		
<b>Person(s) Conducting Field Inspection</b>	Finn Whiting	
	Geologist	
<b>Site Information</b>		
Location:	Pitchers Mound Water Recycling Pit	Time: 3:30
Type of Facility:	Proposed Water Recycling Facility	
<b>Environmental Conditions</b>	Partly cloudy, dry ground conditions	
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: One (1) unnamed non-USGS identified intermittent drainage.

If yes, describe location relative to facility: One (1) unnamed non-USGS identified ephemeral drainage is located 652 feet from the proposed 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 facility, would flow to the north into the relatively fiat lying pipeline right-of-way.

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  
 If yes, List the pit type(s): Water recycling pit
  
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 is one (1) unnamed non-USGS identified intermittent drainage located within a ¼ mile radius of the proposed facility. The facility, as it is currently proposed, limits the direction of a potential release if the north side where it would migrate out into a relatively flat pipeline right-of-way (ROW). During facility construction, it is recommended that Best Management Practices (BMPs) 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 any fill slope sides as well. All installed 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 which would provide any additional information pertaining to the depth to groundwater within a ¼ mile of the proposed facility. There is one permitted well (permit number 36778) located 4,455 feet north of the proposed facility and is noted to have a depth to groundwater of 487 feet. The well is approximately 140 feet lower in elevation than the proposed facility which suggests a depth to groundwater in the immediate vicinity of the proposed facility could be 627 feet, if not greater. Vegetation surrounding the proposed facility is dominated by sage, juniper, and bunch grasses typical of the upland xeric environment. No seeps or springs were identified during the site visit which would suggest the presence of shallow groundwater.

Based on the information collected during the site visit and desktop review, there is a slight potential for impacts to the unnamed USGS identified intermittent drainage located 652 feet north of the proposed facility. The drainage is tributary to Yellow Creek, a USGS identified intermittent stream located approximately four (4) miles to the north. If a potential release was to migrate off the facility on the northern side it would tend to infiltrate into the relatively flat pipeline ROW adjacent to the northern side. If the release were large enough to flow across the ROW it would tend to congregate in the access road bar ditch where flow would be diverted to the east and west away from the above noted drainage. In order to impact the drainage, a release would have to be very large to where the flow volume would cross the access road and migrate further to the north. Even if the drainage were to be impacted by a potential release it is not anticipated it would ever reach yellow creek primarily due to the distance it would have to flow (>4.5 miles) to reach Yellow Creek. The drainage also exhibits ephemeral characteristics in the immediate vicinity of the proposed facility such as no ordinary high water mark and a vegetated bottom indicating it is fed primarily by low volume sheet runoff. In addition, if the drainage was impacted by a potential release, it is not anticipated it would migrate any great distance due to the high infiltration rates of the channel bottom soils.

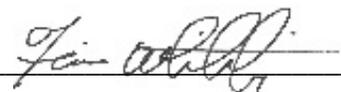
It should also be noted that the proposed facility will be utilized for water storage in a lined pit. With regulatory requirements for free board levels, it is highly unlikely that it would ever overflow resulting in an overland release. It is not anticipated groundwater would be impacted by

the facility due to the fact groundwater is most likely in excess of 600 feet. Although the pit will be lined, adequate leak detection should be installed and closely monitored to ensure there is no fluid loss from the pit.

With the potential to impact surface water features, actual flowing surface water, and groundwater being deemed as low, the facility can be designated as being in a non-sensitive area.

Inspector Signature(s):  Date: 7/18/2014

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

 Date: 07/16/2014

Finn Whiting, *Geologist*  
HRL Compliance Solutions, Inc.