

Sensitive Area Determination Checklist

Williams Production RMT Company		
Person(s) Conducting Field Inspection	Jennifer Belcastro	7/19/11
	<i>Environmental Scientist</i>	
Site Information		
Location:	SG 32-23	Time: 1130
Type of Facility:	Proposed Well Pad	
Environmental Conditions	Sunny; soil conditions are dry.	
Temperature (°F)	89°	

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: The Colorado River and two (2) unnamed USGS identified intermittent drainages that are tributary to the Colorado River.

If yes, describe location relative to facility: The Colorado River is located 353 feet southeast of the proposed facility, one unnamed intermittent drainage is located 260 feet to the southwest, and the second unnamed intermittent drainage is located approximately 255 feet northwest of 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 the facility, would tend to flow to the southwest following the natural contours of the area. Flow would be directly towards 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

If yes, List the pit type(s): Drilling 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 section of this sensitive area determination, the Colorado River is located 353 feet southeast of the proposed facility. The two USGS identified unnamed intermittent drainages merge and flow toward the culvert running underneath the railroad tracks approximately 260 feet to the southwest of the proposed facility. The facility, as it is currently proposed, limits the direction of a potential release to the southeastern and southwestern sides. If flow were to migrate off the southeastern or southwestern sides of the facility flow would be directly towards the unnamed intermittent drainage located 260 feet southwest of the facility. It is not anticipated that the drainage feature to the northwest of the facility would be impacted by a potential release due to the fact it is at a higher elevation than the facility and merges with the other intermittent drainage at that same elevation. During construction of the facility, it would be recommended that Best Management Practices (BMPs) be installed in the form of an earthen perimeter berm and diversion ditch. The perimeter berm should be installed on the graded edge of the facility and the diversion ditch should be installed along the bottom (toe) of the fill slope sides. It would also be recommended that some sort of device be placed near the entrance to the culvert, which directs flow under the railroad tracks, to block flow in the event of a large release. These BMPs 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 it was revealed that there is one permitted water well located 909 feet to the southeast of the proposed facility. The depth to groundwater in that well is noted at 6 feet. However the well is located on the opposite side of the Colorado River which would put the well in a different flow regime than that of the proposed facility. Based on the topographical setting of the facility, there is a very high potential for shallow groundwater. The facility is located adjacent to the Colorado River 100 year floodplain. The only feature separating the facility from the floodplain is the built up railroad tracks. In addition, the facility is approximately 20 feet above the river. Therefore it could be assumed that groundwater will be at the same level of the river and thus potentially less than 20 feet. Therefore, the greatest potential to groundwater would be from a release that occurred over a longer period of time, such as a leaking pit. It would be recommended that if the pit is to remain unlined, the only material that should be placed in it would be cuttings. If material other than cuttings are planned to be placed in the pit, the pit should be lined to COGCC specifications.

Based on the information collected during the site investigation and desktop review, the potential to impact surface water has been deemed high. A release off the facility on the above mentioned sides would flow directly towards the unnamed drainage and then a very short distance to the Colorado River floodplain and the river itself. In addition, the unnamed intermittent drainage is less than 500 feet from the proposed facility which by COGCC decision would classify the facility as being in a sensitive area. The potential for impacts from the facility to groundwater are high as well due to the relatively close proximity of the Colorado River floodplain, the elevation of the facility, and the potential for shallow groundwater. With the potential to impact

both surface water and groundwater, the facility should be designated as being in a sensitive area.

Inspector Signature(s): ME Mumby Date: 9/9/2011

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Jennifer Belcastro Date: 7/19/2011

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