Valmont Station, Boulder County, Colorado

Groundwater Monitoring System Certification

for Compliance with the Coal Combustion Residuals (CCR) Rule

Valmont Station

Xcel Energy

May 4, 2016

CERTIFICATION

Groundwater Monitoring System for Compliance

with the Coal Combustion Residuals Rule

Public Service Company of Colorado, an Xcel Energy Company

Valmont Station, Boulder County, Colorado

I hereby certify that the groundwater monitoring system at Valmont Station is designed to meet the performance standard in Sections 257.91(a)(1) and (2) of the Federal Coal Combustion Residuals (CCR) Rule, and that the groundwater monitoring system has been designed and constructed to ensure that the groundwater monitoring will meet this performance standard for all active CCR units. Valmont Station is owned by the Public Service Company of Colorado (PSCo), an Xcel Energy Company, and is located in Boulder County, Colorado.

I am duly licensed Professional Engineer under the laws of the State of Colorado.

COLORADO LICENSED
GOKHAN INCI
48172
29-APR-2016
PROFESSIONAL ENGINEER

Gokhan Inci, PE (Colorado PE 0048172) April 29, 2016

My license renewal date is October 31, 2017

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Table of Abbreviations and Acronyms

Abbreviation	Definition
AMSL	above mean sea level
BGS	below ground surface
BTOC	below top of casing
CACJ	Clean Air Clean Jobs Act
cm/sec	centimeters per second
CCR	Coal Combustion Residuals
EPA	U.S. Environmental Protection Agency
ft/ft	feet per foot
µS/cm	microsiemens per centimeter
NTU	nephelometric turbidity unit
TOC	top of casing

1.0 Introduction

The U.S. Environmental Protection Agency's (EPA's) final Coal Combustion Residuals (CCR) Rule establishes a comprehensive set of requirements for the management and disposal of CCRs (or coal ash) in landfills and surface impoundments by electric utilities. Valmont, located in Boulder County, Colorado (**Figure 1**), has three CCR Units subject to the CCR Rule: the ash landfill and two incised bottom ash impoundments (**Figure 2**).

This document supports compliance with the CCR Rule by demonstrating that the groundwater monitoring system at Valmont Station meets the requirements outlined in Section § 257.91 of the Rule. Specifically, this document satisfies requirements outlined in Section § 257.91 of the Rule, which states:

- Section § 257.91(f): *'The owner or operation must obtain a certification from a qualified professional engineer stating that the groundwater monitoring system has been designed and constructed to meet requirements of this section* [§257.91]. *If the groundwater monitoring system includes the minimum number of monitoring wells specified in paragraph (c)(1) of this section* [Section § 257.91], *the certification must document the basis supporting this determination*.'

Table 1 summarizes components required by groundwater monitoring systems, per the CCR Rule and the professional engineer's certification of compliance with these requirements. The remainder of this document provides information to support certification for the multiunit groundwater monitoring system for the two CCR units (impoundments) and the groundwater monitoring system for the ash landfill at Valmont Station.

Table 1. Summary of 40 CFR Section § 257.91 Groundwater Monitoring System Requirements and Site-Specific Compliance

Groundwater Monitoring System Requirements	Compliance with Requirement
(a) *Performance standard.* The owner or operator of a CCR unit must install a groundwater monitoring system that consists of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer that: (1) Accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit. A determination of background quality may include sampling of wells that are not hydraulically upgradient of the CCR management area where: (i) Hydrogeologic conditions do not allow the owner or operator of the CCR unit to determine what wells are hydraulically upgradient; or (ii) Sampling at other wells will provide an indication of background groundwater quality that is as representative or more representative than that provided by the upgradient wells; and (2) Accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary that ensures detection of groundwater contamination in the uppermost aquifer. All potential contaminant pathways must be monitored.	**Yes.** The direction of groundwater flow has been determined at the site; the groundwater monitoring system includes the minimum number of wells at appropriate locations and depths to yield groundwater samples necessary to meet performance standards (a)(1) and (a)(2). See Sections 3 and 4.

Table 1. Summary of 40 CFR Section § 257.91 Groundwater Monitoring System Requirements and Site-Specific Compliance	
Groundwater Monitoring System Requirements	**Compliance with Requirement**
(b) The number, spacing, and depths of monitoring systems shall be determined based upon site-specific technical information that must include thorough characterization of: (1) Aquifer thickness, groundwater flow rate, groundwater flow direction including seasonal and temporal fluctuations in groundwater flow; and (2) Saturated and unsaturated geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the uppermost aquifer, including, but not limited to, thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities.	**Yes.** The monitoring system was designed based on results of technical, site-specific data, including (b)(1) and (b)(2). See Sections 3 and 4.
(c) The groundwater monitoring system must include the minimum number of monitoring wells necessary to meet the performance standards specified in paragraph (a) of this section, based on the site-specific information specified in paragraph (b) of this section. The groundwater monitoring system must contain: (1) A minimum of one upgradient and three downgradient monitoring wells; and (2) Additional monitoring wells as necessary to accurately represent the quality of background groundwater that has not been affected by leakage from the CCR unit and the quality of groundwater passing the waste boundary of the CCR unit.	**Yes.** One upgradient and four downgradient wells at the ash ponds and one upgradient and five downgradient wells at the ash landfill that meet the performance standards are being monitored in compliance with the CCR Rule. See Section 4.
(d) The owner or operator of multiple CCR units may install a multiunit groundwater monitoring system instead of separate groundwater monitoring systems for each CCR unit. (1) The multiunit groundwater monitoring system must be equally as capable of detecting monitored constituents at the waste boundary of the CCR unit as the individual groundwater monitoring system specified in paragraphs (a) through (c) of this section for each CCR unit based on the following factors:(i) Number, spacing, and orientation of each CCR unit; (ii) Hydrogeologic setting; (iii) Site history; and (iv) Engineering design of the CCR unit. (2) If the owner or operator elects to install a multiunit groundwater monitoring system, and if the multiunit system includes at least one existing unlined CCR surface impoundment as determined by §257.71(a), and if at any time after October 19, 2015 the owner or operator determines in any sampling event that the concentrations of one or more constituents listed in appendix IV to this part are detected at statistically significant levels above the groundwater protection standard established under §257.95(h) for the multiunit system, then all unlined CCR surface impoundments comprising the multiunit groundwater monitoring system are subject to the closure requirements under §257.101(a) to retrofit or close.	**Yes.** A multiunit system capable of detecting monitored constituents per (d)(1) was installed. See Sections 2 and 4. The 2 CCR impoundments are unlined. Requirements per (d)(2) will be followed.
(e) Monitoring wells must be cased in a manner that maintains the integrity of the monitoring well borehole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space (*i.e.,* the space between the borehole and well casing) above the sampling depth must be sealed to prevent contamination of samples and the groundwater. (1) The owner or operator of the CCR unit must document and include in the operating record the design, installation, development, and decommissioning of any monitoring wells, piezometers and other measurement, sampling, and analytical devices. The qualified professional engineer must be given access to this documentation when completing the groundwater monitoring system certification required under paragraph (f) of this section. (2) The monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to the design specifications throughout the life of the monitoring program.	**Yes.** Well design meets requirements (e). See Section 4. Groundwater monitoring system will be operated and maintained per (e)(2).

Table 1. Summary of 40 CFR Section § 257.91 Groundwater Monitoring System Requirements and Site-Specific Compliance	
Groundwater Monitoring System Requirements	**Compliance with Requirement**
(f) The owner or operator must obtain a certification from a qualified professional engineer stating that the groundwater monitoring system has been designed and constructed to meet the requirements of this section. If the groundwater monitoring system includes the minimum number of monitoring wells specified in paragraph (c)(1) of this section, the certification must document the basis supporting this determination.	**Yes.** System designed and constructed to meet the requirements of Section §257.91. Technical information to support certification and number of wells, per (c)(1). See Sections 2.0, 3.0 and 4.0.

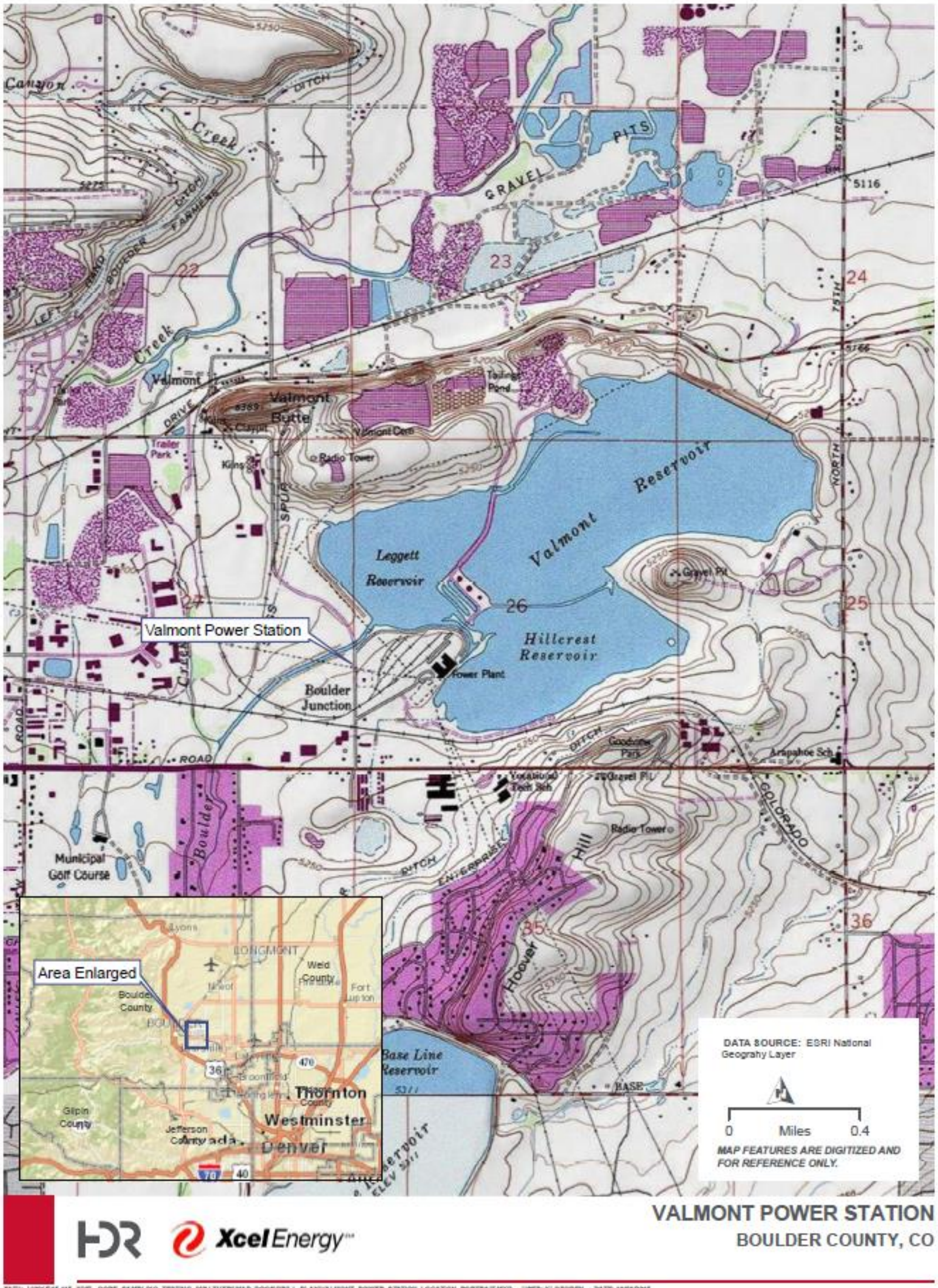

Figure 1. Vicinity Map for Valmont Station

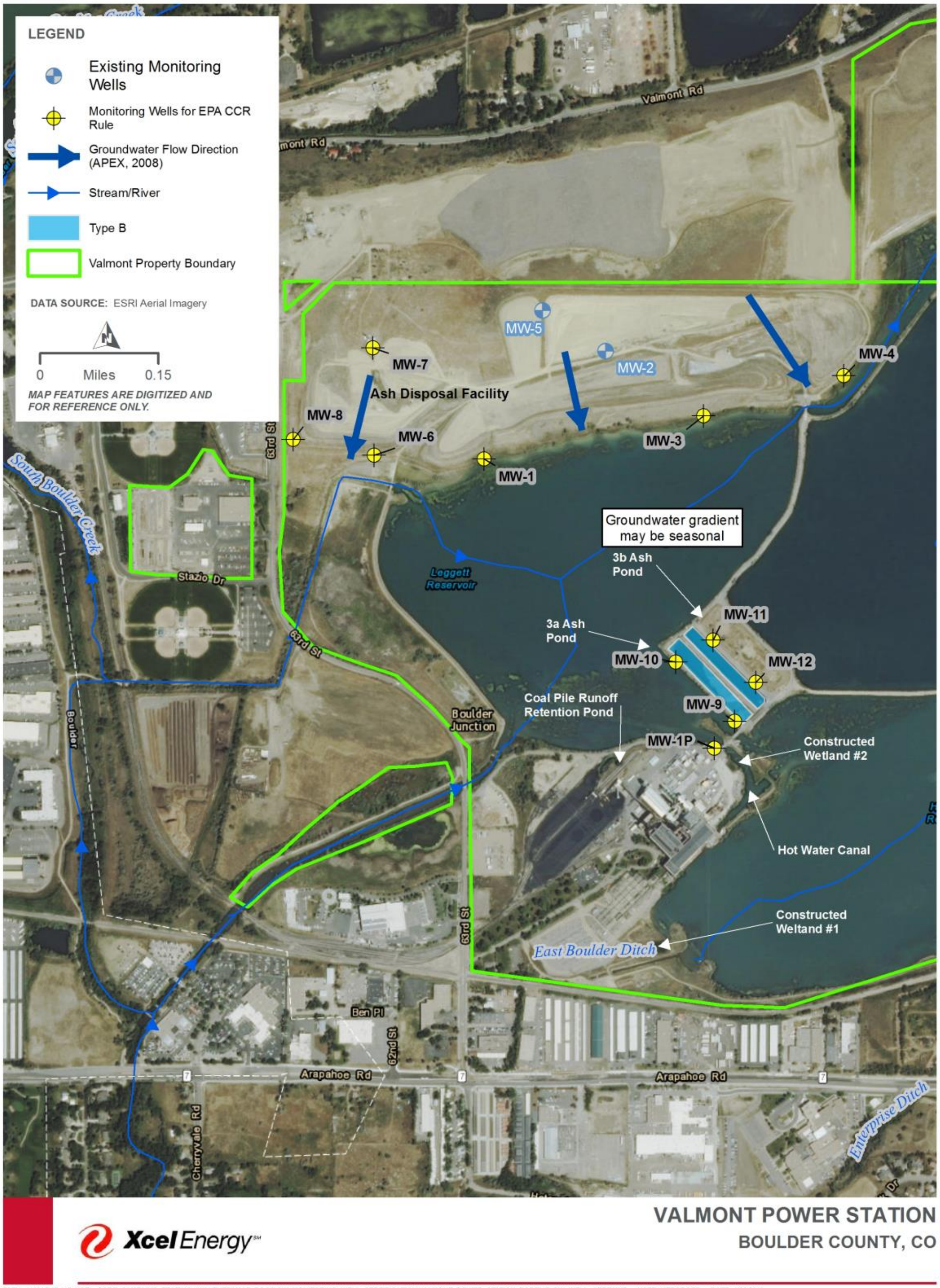

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Figure 2. Valmont Station – CCR Units and Monitoring Well Location Map

2.0 Facility Description

Valmont Station is located in east Boulder County to the northwest of Denver, Colorado (Figure 1). It consists of six units; however, the first four units have been retired. The first Valmont Station coal-fired generation unit went into service in 1924 and three more units were added in ensuing years through 1942. At one time, Valmont was the largest power station west of the Missouri River and it remained the company's largest Colorado generating station for several decades. The four oldest units stopped generating power in 1986. Unit 5 is a coal fired unit and is still in operation. This unit was placed into service in 1964 and is rated at 166 MW. Unit 5 is scheduled to be retired at the end of 2017. The closure of this unit is part of the Clean Air-Clean Jobs Act (CACJ). Unit 6 is a simple-cycle gas turbine and will continue to operate; however, it requires no water for its operation (Tetra Tech, 2013).

Valmont Station has three CCR Units subject to the CCR Rule: the ash landfill and two incised bottom ash impoundments. Bottom ash is pumped to these ponds as slurry. The CCR impoundments are used for temporary storage of bottom ash prior to final disposition (**Figure 2**). The ponds are periodically dredged and the bottom ash disposed in the on-site landfill. The landfill is located adjacent and to the north of Leggett Reservoir, and the impoundments (3a and 3b) are to the west of Leggett Reservoir. Fly ash is handled dry and trucked either off site for beneficial use, or to the on-site ash landfill. **Figure 2** shows the current facility configuration.

There are additional ponds at the facility, including stormwater, constructed wetlands, retention and settling pond. These units do not hold CCR, and therefore are not considered CCR units, in compliance with the CCR Rule:

> *"CCR surface impoundments do not include units generally referred to as cooling water ponds, process water ponds, wastewater treatment ponds, storm water holding ponds, or aeration ponds. These units are not designed to hold an accumulation of CCR, and in fact, do not generally contain significant amounts of CCR."*

2.1 3A CCR Impoundment (3A Ash Pond – West)

3A CCR Impoundment (3A Ash Pond - West) was constructed in 1964 and encompasses 1.02 acres. The impoundment has a 2 to 3 foot thick clay liner that was installed in approximately 1992. Sheet piling is installed around the exterior of the impoundment to a depth of approximately 22 feet. Bottom ash is sluiced from the boiler to the impoundment. Only one of the two impoundments is utilized for ash management during normal operations until the impoundment is filled with ash. After an impoundment is filled with bottom ash, the second impoundment is utilized to receive the sluiced ash. The full pond is dewatered and the ash is dredged and disposed in the on-site landfill. PSCo intends to close the pond when Unit #5 is retired in 2017 as part of the Clean Air-Clean Jobs Act (Tetra Tech, 2013).

2.2 3B CCR Impoundment (3B Ash Pond – East)

3B CCR Impoundment (3B Ash Pond - East) was constructed in 1964 and encompasses 1.02 acres. The design of this impoundment is identical to the 3A Ash Pond – West. The pond has a 2 to 3 foot thick clay liner, with sheet piling around the exterior of the impoundment to a depth of approximately 22 feet. Bottom ash is sluiced from the boiler to the impoundment. Ash removed from the impoundments is trucked to the on-Site ash landfill (Tetra Tech, 2013).

2.3 CCR Ash Landfill

The Valmont Station Ash Landfill is located approximately 1/2 mile northeast of the power plant on the north side of the Leggett Reservoir. The majority of waste disposal at the landfill is coal ash generated at the Valmont Station. Operation of the landfill began in the early 1990's in the eastern portion of the landfill and progressed to other areas of the landfill over time.

The ash disposal facility is a mono-fill underlain by the Pierre Shale Formation. A man-made liner is not present.

3.0 Site Hydrogeology/Geology

Prior hydrogeologic and geotechnical investigations have been conducted at Valmont, as documented in the following reports and summarized in the text below.

- Monitoring Well Installation Report (MW-1-3) (Xcel, 2002)
- Monitoring Well Installation (MW-4-8) (APEX, 2008)
- Geotechnical Engineering Study (Kumar and Associates, Inc., 2008)
- Geotechnical Engineering Study (Kumar and Associates, Inc., 2011)
- Ground Water Monitoring Report, Fall 2014 (Xcel, 2014)
- Ash Disposal Facility Design and Operations Plan (Xcel, 2009)
- Inventory and Preliminary Classification Report, Waste Impoundments (Tetra Tech, 2013)

The ash landfill at Valmont Station is located on the flanks of Valmont Butte, on Slocum Alluvium (gravels and cobbles) above the claystone bedrock Pierre Shale. The Pierre Shale is a sedimentary bedrock that is approximately 2,000 feet thick in this area. The unit consists of claystone with interbeds of siltstone and discontinuous cemented layers. In some geotechnical borings completed in the landfill, compacted ash is directly on top of the Pierre Shale (Kumar and Associates, Inc., 2011). The thickness of alluvium under the ash fill and over the bedrock varies, from 0 feet to 10 feet.

There is evidence of perched water beneath the landfill. The perched water surface is coincident with the top of the Pierre Shale and the water surface of Leggett Reservoir. Due to the Pierre Shale thickness and low permeability, underlying formations do not receive significant recharge from above (Kumar and Associates, Inc., 2011).

Valmont Station is in an area where localized water tables may occur within unconsolidated and fractured, consolidated materials. The monitoring wells in the northern portion of the landfill (MW-2, MW-5, and MW-7) indicate a perched water table occurs near the top of the Pierre Shale, at an elevation of approximately 5,226 to 5,234 feet above mean sea level (AMSL) (APEX, 2008) (**Figure 2**). Further west, the groundwater elevation at MW-8 is consistent; however the ground surface is lower and therefore the water table is only approximately 17 feet below the top of casing. The groundwater elevation in MW-1, MW-3, and MW-4, closest to the

Leggett reservoir is approximately 5,225 feet AMSL. The groundwater elevation at MW-6 is approximately 5,214 feet AMSL. The shallow groundwater flow beneath the landfill follows topography and is basically to the south-southeast in the eastern portion and to the southwest at the western portion of the landfill (**Figure 2**), as compared with the regional, deeper water table (5,200 feet AMSL) that flows to the northwest (APEX, 2008; Xcel, 2009). An average gradient of 0.017 was calculated for the eastern portion of the facility using data from monitoring wells MW-1, MW-2, MW-3, and MW-4. An average gradient of 0.068 was calculated for the western portion of the Facility using data from monitoring wells MW-6, MW-7, and MW-8. The average hydraulic conductivity calculated from slug tests is 0.003 feet/day (APEX, 2008).

The depth to groundwater in monitor wells MW-9 through MW-12 around impoundments 3a and 3b varies between 5,226.5 to 5,226.8 feet amsl in March 2016, and likely coincide with the seasonally fluctuating Leggett Reservoir water surface. The flow direction may flow radially out from the impoundments as there is not enough information about the integrity of the sheet pile walls surrounding the impoundments to determine the hydraulic connection between the impoundments and surrounding sediments. In the nearby MW-1P (different from MW-1 at the landfill), just south of the impoundments near the hot water canal, the depth to groundwater was approximately 3 to 7 feet bgs (APEX, 2015).

4.0 Monitoring Wells

The CCR Rule requires, at a minimum, one upgradient and three downgradient monitoring wells per CCR unit to be completed in the uppermost aquifer. Section 257.9 of the Rule states that the operator: *"…may install a multiunit groundwater monitoring system instead of separate groundwater monitoring systems for each CCR unit."* In addition, the CCR Rule states that downgradient monitoring wells should be installed to: *"accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary that ensures detection of groundwater contamination in the uppermost aquifer."*

Based on the CCR requirements, hydrogeological data, and site visits, five wells were sited for CCR compliance for the 3A and 3B ash ponds, with four downgradient monitoring wells around the ponds and one upgradient well (MW-1P) at the plant. Six wells were identified for CCR compliance for the Ash Landfill, with five downgradient monitoring wells and one upgradient well (**Figure 2**). **Table 2** provides the construction details of wells monitored for compliance with the CCR Rule.

<u>Upgradient Monitoring Well at the CCR Impoundments</u>

The nearest existing well to the impoundments is MW-1P located approximately 300 feet south of the impoundments. The upgradient well for the impoundments will be the existing MW-1P, located immediately south of the impoundments on the edge of Leggett Reservoir (**Figure 2**). Although the groundwater flow direction beneath the impoundments is uncertain due to lack of existing wells, flow may be radial into and out of the impoundments from and to Leggett Reservoir with seasonal changes in reservoir levels. MW-1P is the background ("upgradient") well based upon its location south of the impoundments and separation from the impoundments by Leggett Reservoir.

<u>Upgradient Monitoring Well at the Ash Landfill</u>

There are eight monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8; **Figure 2**) at the landfill. The upgradient monitoring well is MW-7. It is located on the northwest side of the landfill. Groundwater in this area flows south towards Leggett Reservoir. Therefore, MW-7 will provide a representative sample of upgradient groundwater quality entering the landfill.

Downgradient Monitoring Wells at the CCR Impoundments

The flow of groundwater in the immediate vicinity of the impoundments is unknown, but is thought to flow radially from the impoundments to Leggett Reservoir, at least on a seasonal basis. There is inadequate access for drilling between the impoundments; therefore, a multi-unit monitoring network, consisting of four wells (MW-9, MW-10, MW-11, MW-12), along the perimeter of the impoundments will serve as downgradient wells (Figure 2). Each downgradient well is located at a corner of the waste boundary of the CCR units to ensure the water quality from these four locations will detect constituents from the CCR unit, if present.

Downgradient Monitoring Wells at the Ash Landfill

Five monitoring wells at the landfill (MW-1, MW-3, MW-4, MW-6, and MW-8; **Figure 2**) are located along the southern boundary of the landfill and are hydrologically downgradient based upon the southern groundwater flow direction. Therefore, they meet the criteria for downgradient monitoring wells under the CCR Rule.

4.1 Well Construction

All of the CCR monitoring wells were drilled by a licensed well driller using a nominal 6-inch diameter hollow-stem auger drilling method. All wells were drilled to a depth of 10 feet below the water table, or to the top of the Pierre Shale Formation, whichever was shallower. The placement of the monitoring well screens just above the bedrock was designed for capturing water in the uppermost aquifer, which is the alluvial aquifer, which could be impacted by the CCR impoundments. Alluvial groundwater above the bedrock will partially infiltrate into the bedrock on a limited basis, but will primarily flow within the alluvium above the bedrock and discharge to the Reservoir. Therefore, screens were designed to capture the uppermost alluvial groundwater (HDR, 2015a).

Each well was constructed with 2-inch diameter, Schedule 40 PVC casing and screen with 0.010-inch screen slots. The water table was encountered at all four borings. The 10 feet of screen installed at each well extended at least 10 feet below the water table to the approximate top of bedrock. The Pierre Shale bedrock was encountered at approximately 18 feet at MW-9, 19 feet at MW-10, and 24 feet bgs at MW-11 and MW-12 (HDR, 2015b). Well construction details for all CCR wells are summarized in **Table 2**. A 10-20 washed silica sand was used for the filter pack and placed approximately 2 to 3 feet above the well screen. An annular seal of bentonite grout was placed to above the top of the filter pack and hydrated for 12 hours after placement. An annular surface seal consisting of neat cement was installed from the top of the bentonite grout to the surface. Wells were developed according to the Well Installation Plan (HDR, 2015a).

Table 2. Monitoring Well Construction										
Well I.D.	**Northing**	**Easting**	**Elevation TOC (ft)**	**Well Total Depth (ft bgs)**	**Screen Interval (ft bgs)**	**Well Stickup (ft)**	**Well Type**	**Static WL (ft AMSL) March 2016**	**Well Permit Number**	**Approximate Depth of Pierre Shale (ft bgs)**
	(State Plane, NAD 83 feet)									
MW-1	482404.7332	4430670.386	5234.27	38.7	28.5-38.5	2.6	2-inch PVC	5226.70	257834	14.0
MW-1P	482874.6351	4430078.765	5234.38	13.0	3-13	unknown	2-inch PVC	5226.50	257298	NA
MW-3	482852.3567	4430758.349	5233.52	49.4	39.2-49.2	2.8	2-inch PVC	5228.09	257836	9.0
MW-4	483138.3867	4430840.14	5237.21	22.6	12.5-22.5	1.9	2-inch PVC	5227.73	275212	15.5
MW-6	482180.545	4430677.549	5235.23	30.1	15-30	1.75	2-inch PVC	5215.60	275214	6.0
MW-7	482177.6864	4430897.269	5299.46	65.6	50.5-65.5	2.5	2-inch PVC	5267.18	275215	16.0
MW-8	482014.6153	4430710.278	5234.97	30.1	15-30	2.3	2-inch PVC	5211.36	275216	10.0
MW-9	482916.0858	4430133.974	5234.25	26	8.83-18.83	1.98	2-inch PVC	5226.47	299967	18.0
MW-10	482795.7423	4430255.585	5233.81	25	10-20	1.92	2-inch PVC	5226.51	299968	20.0
MW-11	482871.9677	4430300.494	5235.22	25.5	12-22	2.16	2-inch PVC	5226.79	299969	24.0
MW-12	482959.2548	4430214.045	5235.05	26	13.6-23.6	2.25	2-inch PVC	5226.46	299970	24.0

bgs = below ground surface TOC = top of casing AMSL = above mean sea level

5.0 Groundwater Quality Sampling

5.1 Schedule

Sampling is conducted at a frequency compliant with CCR Part 257.94. Eight rounds of upgradient and downgradient monitoring well sampling will be completed before October 17, 2017. These samples will represent background water quality. Groundwater sampling will be conducted quarterly between fourth quarter 2015 and third quarter 2017. After eight rounds of sampling to establish background water quality, semi-annual (twice per year) groundwater detection monitoring will be initiated. Samples will be collected following protocol in the Xcel Energy Groundwater Sample Collection Standard Operating Procedure (HDR, 2015c). Groundwater quality sampling will be conducted in all upgradient and downgradient monitoring wells unless wells are dry. In accordance with the CCR Rule, groundwater samples will not be field filtered. The field parameters of turbidity, pH, and temperature will be measured using a YSI Professional Plus (or an equivalent) portable water quality instrument that has been calibrated prior to use.

5.2 Analytical testing

Analytical testing of groundwater samples will be performed by TestAmerica or other EPA certified laboratory. Samples will be analyzed for the parameters shown on **Table 3**, which include all of the parameters in Appendices III and IV of Part 257 for the initial eight background sample events, plus Total Suspended Solids (TSS). For subsequent events, it is anticipated the parameters listed in Appendix III will be analyzed, unless assessment monitoring is required. For quality control, one field duplicate sample and one field equipment blank sample will be collected for each sample event. The laboratory will analyze matrix spike/matrix spike duplicates at a rate of 5 percent, per laboratory quality control standards.

Table 3. Groundwater Quality Parameters
Appendix III Constituents for Detection Monitoring
Boron
Calcium
Chloride
Fluoride
pH
Sulfate
Total Dissolved Solids (TDS)
Appendix IV Constituents for Assessment Monitoring
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt

Table 3. Groundwater Quality Parameters
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228 combined
Additional Parameters
Total Suspended Solids (TSS)

6.0 Reporting

The CCR Rule 297.90(e) identifies the reporting requirements for the groundwater monitoring program for the CCR units. The annual reporting documents will be developed no later than January 31, 2018 and annually thereafter. The annual reports will be placed in the Valmont operating record. The data validation, verification, and statistical methods used to analyze each specified constituent in each monitoring well is described in a separate Statistical Methods Certification document.

Annual reports will summarize key monitoring actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For CCR compliance, Xcel Energy will file the report in the facility operating records.

Xcel will comply with the CCR Rule recordkeeping requirements specified in § 257.105(h), notification requirements specified in § 257.106(h), and internet requirements specified in § 257.107(h).

7.0 References

APEX Consulting Services, Inc. 2008. Letter to Jennifer McCarter, Xcel Energy. Valmont Station Ash Disposal Facility Additional Monitoring Well Installation. February 11, 2008.

———. 2015. Letter to Dino Lombardi, Xcel Energy. Annual Groundwater Monitoring and Diesel Fuel Recovery, Valmont Station, 1800 North 63rd Street, Boulder, Colorado. May 29, 2015.

HDR, 2015a. Monitoring Well Installation Plan for Compliance with the Coal Combustion Residuals (CCR) Rule, Xcel Energy Valmont Station, November 30, 2015.

HDR, 2015b. Monitoring Well Installation Report for Compliance with the Coal Combustion Residuals (CCR) Rule, Xcel Energy Valmont Station, February 5, 2016.

HDR, 2015c. Groundwater Sample Collection Standard Operating Procedure for Compliance with the Coal Combustion Residuals (CCR) Rule, Xcel Energy.

Kumar and Associates, Inc. 2011. Geotechnical Engineering Study and Slope Stability Evaluation, Ash Disposal Facility, Valmont Station, 1800 North 63rd Street, Boulder, Colorado. December 21, 2011.

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——— 2014. Valmont Station Ash Disposal Site Ground Water Monitoring Report, Fall 2014. December 2014.