Groundwater Monitoring System Certification

for Compliance with the Coal Combustion Residuals (CCR) Rule

Cherokee Station

Xcel Energy

April 26, 2016

Revised:
February 26, 2019

Cherokee Station, Denver, Colorado

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Table of Abbreviations and Acronyms

Abbreviation	Definition
cm/sec	centimeters per second
CCR	Coal Combustion Residuals
EPA	U.S. Environmental Protection Agency
ft/ft	feet per foot
TSS	Total Suspended Solids

Certification

Groundwater Monitoring System for Compliance with the Coal Combustion Residuals Rule

Public Service Company of Colorado, an Xcel Energy Company

Cherokee Station, Adams County, Colorado

I hereby certify that the groundwater monitoring system at Cherokee Station is designed to meet the performance standard in Sections 257.91(a)(1) and (2) of the Federal Coal Combustion Residuals Rule, and that the groundwater monitoring system has been designed and constructed to ensure that the groundwater monitoring will meet this performance standard for the CCR units located at Cherokee Station.

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Colorado PE License 0053467

License Renewal Date October 31, 2019

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 CCR (or coal ash) in landfills and surface impoundments by electric utilities. Cherokee Station, located in Denver, Colorado (**Figure 1**), is owned and operated by Public Service Company of Colorado (PSCo), an Xcel Energy Company. Cherokee Station has four CCR units subject to the CCR Rule: the former incised West, Center, and East ash impoundments, and the former incised Cooling Tower Retention Pond (CTRP) (**Figure 2**). The CTRP was closed in 2017 and ash impoundments were closed in 2018; each impoundment was physically closed by removal of CCR, with ongoing groundwater monitoring.

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

- Section § 257.91(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 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 groundwater monitoring systems for the CCR units at Cherokee 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 three downgradient wells that meet the performance standards are being monitored in compliance with the CCR Rule at each CCR unit. 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 for the former West, Center, and East ash impoundments. See Sections 2 and 4. The 3 CCR ash impoundments were 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.

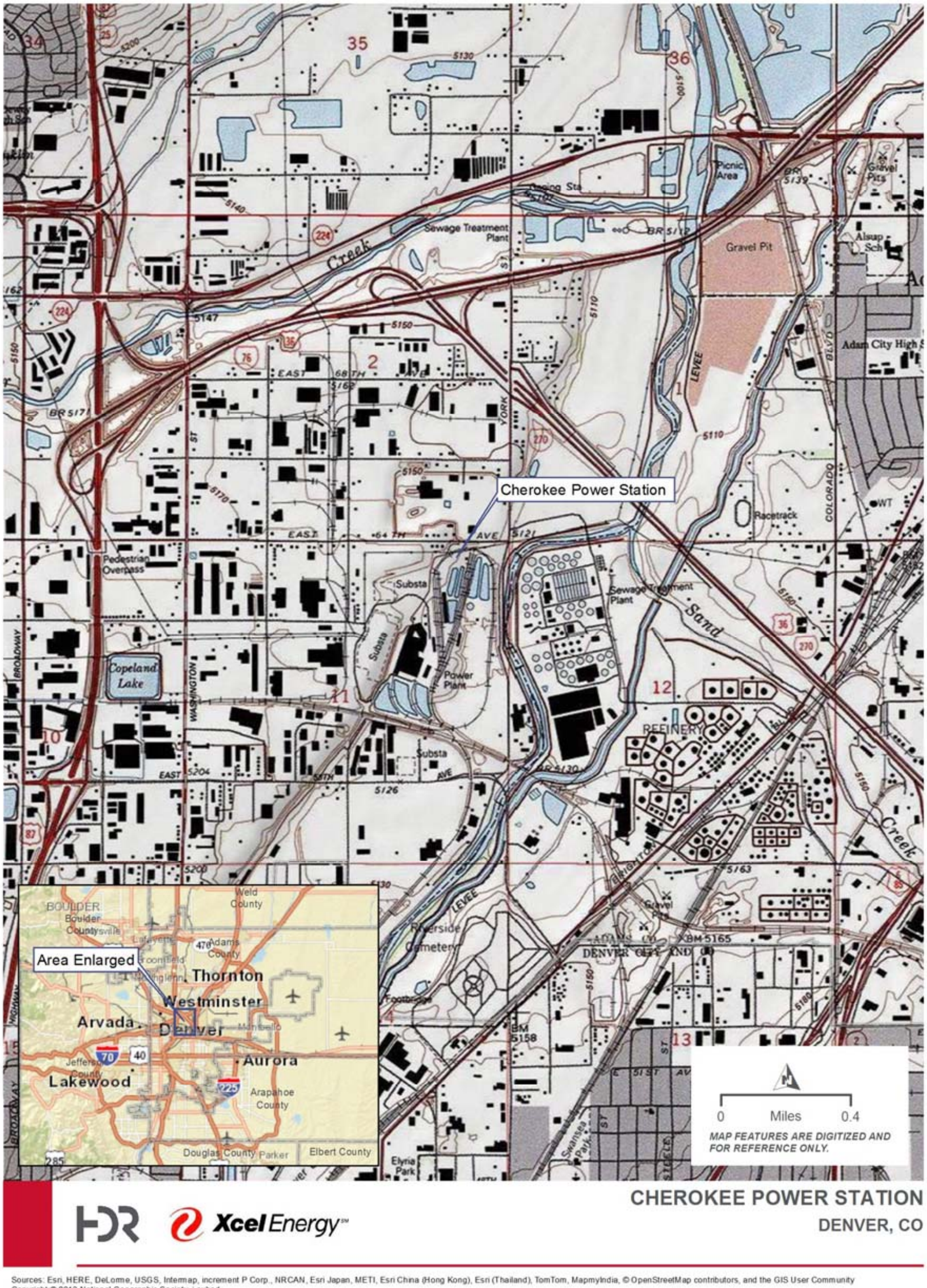

Figure 1. Vicinity Map for Cherokee Station

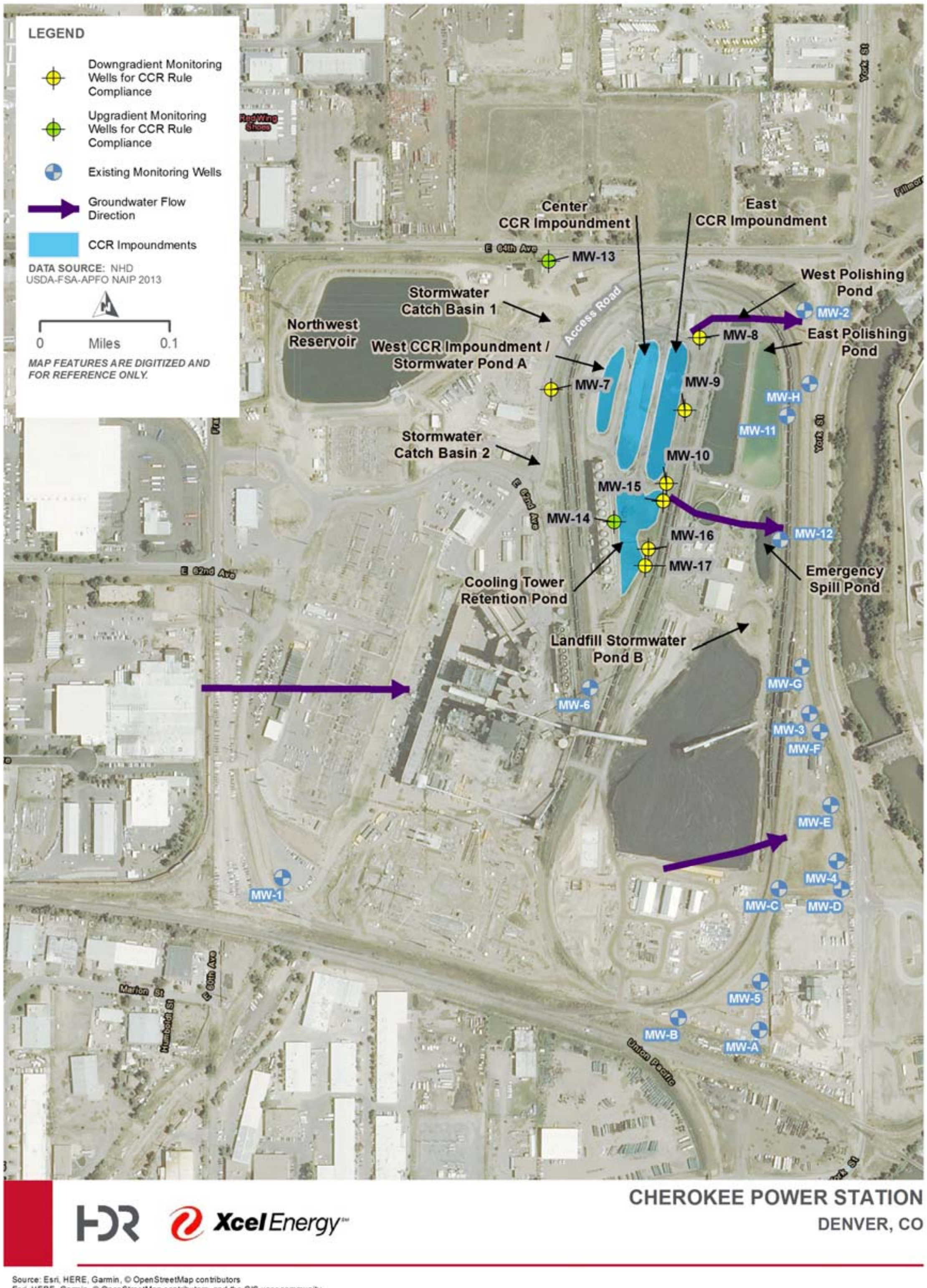

Figure 2. Cherokee Station – CCR Units and Monitoring Well Location Map

2.0 Facility Description

Cherokee Station is a coal-fired, steam turbine electric generating station; the fuel source for the existing coal-fired units is sub-bituminous, low-sulfur coal supplied by several mines in western Colorado. Cherokee Station uses and returns water to the Platte River, and the plant has strict standards for all water discharged back in to the river. Cherokee Station began operating in 1957 (Unit 1). Unit 2 went into service in 1959 and Unit 3 and Unit 4 in the 1960s. Cherokee Station has been converted from coal to natural gas for fuel. As a result, Units 1 and 2 have been retired. Additionally, Unit 4 was converted to natural gas in 2017, and Unit 3 ceased operating on coal that same year.

Cherokee Station had three incised ash impoundments that were used for storage of CCR: the West, Center, and East ash impoundments (**Figure 2**). The ash impoundments were physically closed by removal of all CCR, which was completed in December 2018; completion of CCR removal will be certified by a Professional Engineer in early 2019. The three CCR ash impoundments did not contain engineered low-permeability liners. Bottom ash was sluiced to the Center and the East CCR impoundments. Fly ash was handled dry and collected in on-site silos. Both bottom ash and fly ash were hauled off-site to facilities permitted for either beneficial use or disposal.

The former CTRP historically received overflow from Cooling Tower 4 and CCR (**Figure 2**). The CTRP ceased receiving CCR prior to the October, 2015 effective date of the CCR Rule and therefore initially met the definition of an inactive impoundment. The CTRP became subject to the groundwater monitoring requirements under the Direct Final Rule effective October 4, 2016.

Additional ponds at the facility include emergency spill, stormwater, and polishing ponds. 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 West CCR Impoundment/Stormwater Pond A

The West CCR Impoundment/Stormwater Pond A was initially constructed in 1957 and modified in 2012. The original dimensions were approximately 20 feet deep, 455 feet long, and 90 feet wide, with a surface area of approximately 0.94 acre (Tetra Tech, 2013). The West CCR impoundment was unlined. Historically, it received influent water from sluiced bottom ash as well as other sources. In 2012, it was converted for use as a stormwater pond and currently receives only stormwater from the northwest portion of the site and emergency overflow from the Northwest Reservoir (TetraTech, 2013). Prior to the 2012 modification, some but not all of the ash from this impoundment was removed.

During the 2012 modification, the side slopes were re-graded and covered with clean fill; and clean fill was placed on the pond bottom to bring it up to a depth of about 9 feet. Inlets to the pond were armored with riprap to prevent erosion of the side slopes. Outflow was routed into the lift station and through the wastewater treatment process. The impoundment volume was approximately 6.8 acre-feet. This impoundment was closed by removal of all CCR in December 2018 and will be reconstructed in 2019 for storm water containment and other operational purposes.

2.2 Center CCR Impoundment

The Center CCR Impoundment was constructed in 1957 and was unlined. It had a depth of approximately 20 feet. It was approximately 520 feet long and 80 feet wide, with a surface area of approximately 0.48 acre (Tetra Tech, 2013). The Center CCR Impoundment's primary influent water source was sluiced bottom ash from Unit 3 and Unit 4, but it also received other influent sources (yard sumps, micro/nano filtration backwash, boiler seal water, and clarifier underflow). Effluent water was routed into the lift station and through the wastewater treatment process. This impoundment was closed by removal of all CCR in December 2018.

2.3 East CCR Impoundment

The East CCR Impoundment was constructed in 1957 and was unlined. It had a depth of approximately 20 feet. It was approximately 580 feet long and 90 feet wide, with a surface area of approximately 1.14 acres (Tetra Tech, 2013). Sluiced bottom ash was the primary source of water influent into the East CCR Impoundment, although other influent sources (yard sumps, micro/nano filtration backwash, boiler seal water, and clarifier underflow) also contributed to the East Impoundment. Effluent water was routed into the lift station and through the wastewater treatment process. This impoundment was closed by removal of all CCR in December 2018.

2.4 Cooling Tower Retention Pond

The former CTRP had a depth of approximately 20 feet. It is approximately 275 feet long and 125 feet wide, with a surface area of approximately 0.77 acre (Tetra Tech, 2013). Overflow from Cooling Tower 4 is the primary source of water influent into the CTRP. The CTRP was found to contain ten feet of ash and therefor subject to the CC Rule. The inactive CTRP became subject to the groundwater monitoring requirements under the Direct Final Rule effective October 4, 2016. The pond was physically closed by removal of all CCR, which was completed in March 2017; completion of CCR removal was certified by a Professional Engineer.

3.0 Site Hydrogeology/Geology

Prior hydrogeologic and geotechnical investigations have been conducted at Cherokee as documented in the following reports and summarized in the text below:

- March 2009 Groundwater/Surface-Ponds Data Evaluation (GeoTrans, Inc., 2009)
- Surface Water Impoundment Infiltration Characterization Analysis (GeoTrans, Inc., 2010)
- Inventory and Preliminary Classification Report, Waste Impoundments (Tetra Tech, 2013)

The uppermost aquifer under Cherokee Station is the alluvial aquifer associated with the nearby South Platte River and is present across the site. Groundwater under the facility flows east, perpendicular to the South Platte River, where it ultimately discharges to the river (GeoTrans, Inc., 2009). A total of 14 existing monitoring wells (MW-1 to MW-6 and MW-A to MW-H) are located throughout the facility. The static groundwater level is shallow, measured between 7 and 20 feet below the top of monitoring well casings in 2009 by GeoTrans, Inc. (2009). The alluvial aquifer is between 8 and 38 feet thick, mostly sandy, in the area of the impoundments and is underlain by the low permeability claystone deposits of the Denver Formation that inhibits vertical downward flow to the deeper, regional Arapahoe Aquifer (GeoTrans, Inc. 2009). The Denver Formation is over 70 feet thick in this area (CDH, 1993).

The hydraulic gradient under the western half of the facility is approximately 0.017 feet per foot (ft/ft); however, the hydraulic gradient between the CCR facilities and the eastern property boundary is about 0.39 ft/ft (GeoTrans, Inc., 2009). The permeability of the alluvial aquifer is unknown; however, GeoTrans, Inc. (2009) assumed horizontal hydraulic conductivity of $1x10^{-3}$ centimeters per second (cm/sec) for alluvial deposits based on a hydraulic conductivity value of $5x10^{-3}$ cm/sec that was established for similar alluvial deposits approximately 2 miles from this site. GeoTrans, Inc. (2009) calculated groundwater velocities across the site is expected to be approximately 90 to 200 feet per year.

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.”*

4.1 Ash Impoundments Multiunit Monitoring System

Based on the CCR requirements, hydrogeological data, and site visits, five wells were sited for CCR compliance at the three ash impoundments to serve as one upgradient/background well and four downgradient monitoring wells **(Figure 2)**. Site Services, LLC drilled five monitoring wells at Cherokee in November 2015.

Background/Upgradient Monitoring Well

Five wells were sited for CCR compliance for this multiunit monitoring network of all three ash impoundments, two hydraulically upgradient monitoring wells (MW-7 and MW-13) and three downgradient monitoring wells (MW-8, MW-9, and MW-10) (**Figure 2**). The flow of groundwater is eastward, perpendicular to the length of the impoundments, such that the MW-7 well location on the west side of the West Impoundment was sited to be hydraulically upgradient of all three of the impoundments. However, monitoring once installed identified that the ponds may have influenced well MW-7; therefore the MW-7 well is potentially not representative of background water quality. Monitoring well MW-13 is located upgradient of the CCR impoundments and serves as the background monitoring well for the CCR facilities **(Figure 2)**. Well MW-7 will be compared against background water quality in the same manner as the downgradient monitoring wells.

Downgradient Monitoring Wells

The flow of groundwater is perpendicular to the length of the impoundments, such that installation of downgradient monitoring wells to the east of the East Impoundment will monitor potential impacts to groundwater from all three CCR units. There is inadequate access for drilling between the impoundments; therefore, a multi-unit monitoring network, consisting of three wells, was installed along the boundary of the furthest downgradient impoundment (east side of the East Impoundment).

All three downgradient wells (MW-8, 9, and 10; see **Figure 2**) were installed immediately east of the East Impoundment, and west of the access road and rail spur that separate the CCR units from other down gradient non-CCR impoundments. The three downgradient wells are spaced approximately equidistant from one another along the length of the impoundment. Each downgradient well is located at the waste boundary of the CCR unit to ensure the water quality from these three locations will detect constituents from the CCR unit, if present.

4.2 Cooling Tower Retention Pond Monitoring System

Based on the CCR requirements, hydrogeological data, and site visits, four wells were sited for CCR compliance at the former CTRP to serve as one upgradient/background well and three downgradient monitoring wells **(Figure 2)**. Site Services Drilling, LLC drilled four monitoring wells at Cherokee in August 2018.

Background/Upgradient Monitoring Well

The upgradient well (MW-14) is located west of the former CTRP (**Figure 2**). The flow of groundwater is eastward, such that the MW-14 well location on the west side of the CTRP is upgradient of the pond. The CTRP was clean closed by removal of all CCR in 2017 and is typically dry (potential emergency use for plant wastewater); thus there is little risk of groundwater mounding under the pond as a result of pond infiltration. Thus, water quality from the MW-14 location will accurately represent the quality of background groundwater that has not been affected by leakage from the former CCR unit.

Downgradient Monitoring Wells

The flow of groundwater is perpendicular to the length of the impoundment, such that installation of downgradient monitoring wells to the east of the CTRP will monitor potential impacts to groundwater from the former CTRP. All three downgradient wells (MW-15, MW-16, and MW-17; see **Figure 2**) were installed immediately east of the former CTRP, and west of the rail spur. The three downgradient wells are spaced approximately equidistant from one another along the length of the former pond. Each downgradient well is located at the waste boundary of the CCR unit to ensure the water quality from these three locations will detect constituents from the CCR unit, if present.

4.3 Well Construction

The boreholes for each well were drilled by a licensed well driller. All wells were drilled to a depth of 10 feet below the water table, or to the top of the claystone Denver Formation, whichever was shallower. The placement of the monitoring wells 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 South Platte River. Therefore, screens were designed to capture the uppermost alluvial groundwater.

Each well was constructed with 2-inch diameter, Schedule 40 PVC casing and screen with 0.010-inch screen slots. Design of monitoring wells commonly includes screens that are 10 feet long. However, at wells MW-7 and MW-8, 5-foot screens were installed due to encountering the consolidated bedrock at 8 and 12 feet below ground surface, respectively. At wells MW-7, MW-8, MW-9, MW-10, MW-14, MW-15, MW-16, and MW-17 bedrock was encountered during drilling and the bottom of the well screen was set just below the bottom of the bedrock contact. In these wells the entire screen may not be saturated. A 10-20 washed silica sand was used for the filter pack and placed approximately 5 feet above the well screen. An annular seal of coated bentonite pellets was placed from the top of the filter pack to the surface and hydrated after placement. Monitoring wells were developed and surveyed by a licensed professional surveyor after construction.

Table 2. Monitoring Well Construction

Well I.D.	Easting (NAD 83 UTM Zone 13, meter)	Northing (NAD 83 UTM Zone 13, meter)	Elevation TOC (ft)	Well Total Depth (ft bgs)	Screen Interval (ft bgs)	Well Stickup (ft)	Well Type	Static WL (ft TOC) November 2015	Well Permit Number	Approximate Depth of Denver Formation (consolidated bedrock) if encountered (ft bgs)
MW-7	503100.254	4406795.976	5153.86	8.00	3.00-8.00	1.16	2-inch PVC	5.14	299988	8
MW-8	503284.3986	4406859.982	5140.64	13.92	8.92-13.92	1.25	2-inch PVC	9.50	299989	12
MW-9	503266.2015	4406770.146	5141.26	24.75	14.75-24.75	1.57	2-inch PVC	20.62	299990	22
MW-10	503243.5424	4406678.608	5140.88	40.21	30.21-40.21	1.59	2-inch PVC	27.62	299991	38
MW-13	503096.9353	4406955.757	5174.50	32.00	12.00-32.00	2.05	2-inch PVC	27.75	299993	31
MW-14	503178.3987	4406631.423	5139.06	28.50	18.50-28.50	-0.53 (flush mount)	2-inch PVC	24.56*	NA	28
MW-15	503239.5493	4406657.334	5140.07	37.00	27.00-37.00	2.76	2-inch PVC	31.48*	NA	39
MW-16	503221.0692	4406597.489	5137.98	35.00	25.00-35.00	2.84	2-inch PVC	29.22*	NA	35
MW-17	503216.9593	4406576.626	5134.88	38.00	28.00-38.00	-0.20 (flush mount)	2-inch PVC	26.03*	NA	38

Notes: NA = not yet available, applications submitted to CDWR
TOC = top of casing
BTOC = below top of casing
BGS = below ground surface
amsl = above mean sea level
*Water level from August 2018

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 were completed before October 17, 2017 for the former ash impoundment wells (MW-7, MW-8, MW-9, MW-10, and MW-13). Groundwater sampling of those facilities was conducted quarterly between the fourth quarter 2015 and the third quarter 2017 and represents background monitoring. After the sampling to establish background water quality, detection monitoring was initiated in 2017. Groundwater monitoring will continue as appropriate based upon the results of sampling.

As stipulated in the Direct Final Rule (Extension Rule), eight rounds of background groundwater sampling were initiated in 2018 for the former CTRP, to be completed before April 17, 2019. Sampling frequency was conducted on an approximate three week frequency, beginning in June 2018, for collection of seven samples in 2018. After sampling to establish background water quality is completed, detection monitoring will be initiated in compliance with CCR Part 257.94.

Samples are collected following the protocol in the Xcel Energy Groundwater Sample Collection Standard Operating Procedure (HDR, 2015c). Groundwater quality sampling is conducted in all upgradient and downgradient monitoring wells unless wells are dry. In accordance with the CCR Rule, groundwater samples are not field filtered. The field parameters of turbidity, pH, and temperature are 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. For the initial eight background sample events, samples are analyzed for the constituents shown on **Table 3**, which include all of the constituents in Appendices III and IV of Part 257, plus Total Suspended Solids (TSS). For detection monitoring, the constituents listed in Appendix III will be analyzed. Subsequent sampling events will be analyzed for the constituents listed in Appendix III or IV as appropriate, based upon the results of previous sampling and statistical evaluation of results. 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 Constituents
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
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 were developed no later than January 31, 2018 and annually thereafter. The annual reports are placed in the Cherokee 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. A semi-annual report will be prepared and placed in the operating record for any CCR facility that triggers assessment of corrective measures under 257.96.

Annual reports and semi-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 operating record.

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

Colorado Department of Health (CDH), 1993. Record of Decision ASARCO Globe Plant Site. Denver, Colorado. February 18, 1993.

GeoTrans, Inc., 2009. Letter to Christine Johnston, Xcel Energy. Groundwater/Surface-Ponds Data Evaluation, Cherokee Station, Denver, Colorado. March 2009.

GeoTrans, Inc., 2010. Letter to Christine Johnston, Xcel Energy. Surface Water Impoundment Infiltration Characterization Analysis, Cherokee Station, Denver, Colorado. September 2010.

Tetra Tech, 2013. Inventory and Preliminary Classification Report, Waste Impoundments, Cherokee Station, Denver, Colorado. March 29, 2013.