Comanche Station CCR Groundwater Monitoring 2019 Annual Report

Date:	Thursday, January 30, 2020
To:	Jennifer McCarter, Public Service Company of Colorado
From:	Matt Rohr, HDR, Inc.
Subject:	Comanche Station 2019 No Aquifer Determination
Reference:	1) Comanche Station 2018 No Aquifer Determination Memorandum, January 2019

1 Introduction

The U.S. Environmental Protection Agency's (EPA's) final Coal Combustion Residuals (CCR) Rule establishes comprehensive a set of requirements for the management and disposal of CCR (or coal ash) in landfills and surface impoundments by electric utilities. Comanche Station, located in Pueblo, Colorado (Figure 1) is owned and operated by Public Service Company of Colorado (PSCo), an Xcel Energy Company. Comanche Station has two active CCR units, an impoundment (Bottom Ash Pond) and an Ash Disposal Facility (landfill) (Figure 2) that may be subject to various requirements of the CCR Rule.

Per the CCR Rule, groundwater monitoring is required to monitor potential impacts to the uppermost aquifer. PSCo has characterized hydrogeologic conditions at the site in multiple previous investigations and through CCR compliance monitoring, and determined that the uppermost aquifer at the site is in the Dakota Sandstone, approximately 1,500 feet below ground surface. These studies have also demonstrated that there is no reasonable probability for the Bottom Ash Pond or Ash Disposal Facility to impact the uppermost aquifer. The properties of the isolated pockets of shallow perched water present in the colluvium beneath Comanche Station are not consistent with the definition of an "aquifer" in the CCR Rule (40 CFR 257.53), as discussed in the January 2018 *Comanche Station 2018 No Aquifer Determination Memornadum.* The perched water in the colluvium at Comanche does not qualify as an aquifer because its yield is too low, TDS concentrations are too high, it is not laterally continuous, and it is not a current water supply source. However, PSCo implemented monitoring of the perched water pursuant to the Comanche Groundwater Monitoring System Certification between 2015 and 2017 (HDR, 2018). Groundwater monitoring was implemented as defined in the CCR Rule to establish characteristics of the shallow perched water where present. In 2018 and 2019 PSCo monitored the wells in the CCR program through water level monitoring on a semi-annual basis. In addition, despite the fact that the shallow perched water is not an aquifer, in 2020 PSCo intends to resume the sampling and analysis program following the CCR Rule groundwater monitoring program requirements in 40 CFR 257.93-95.

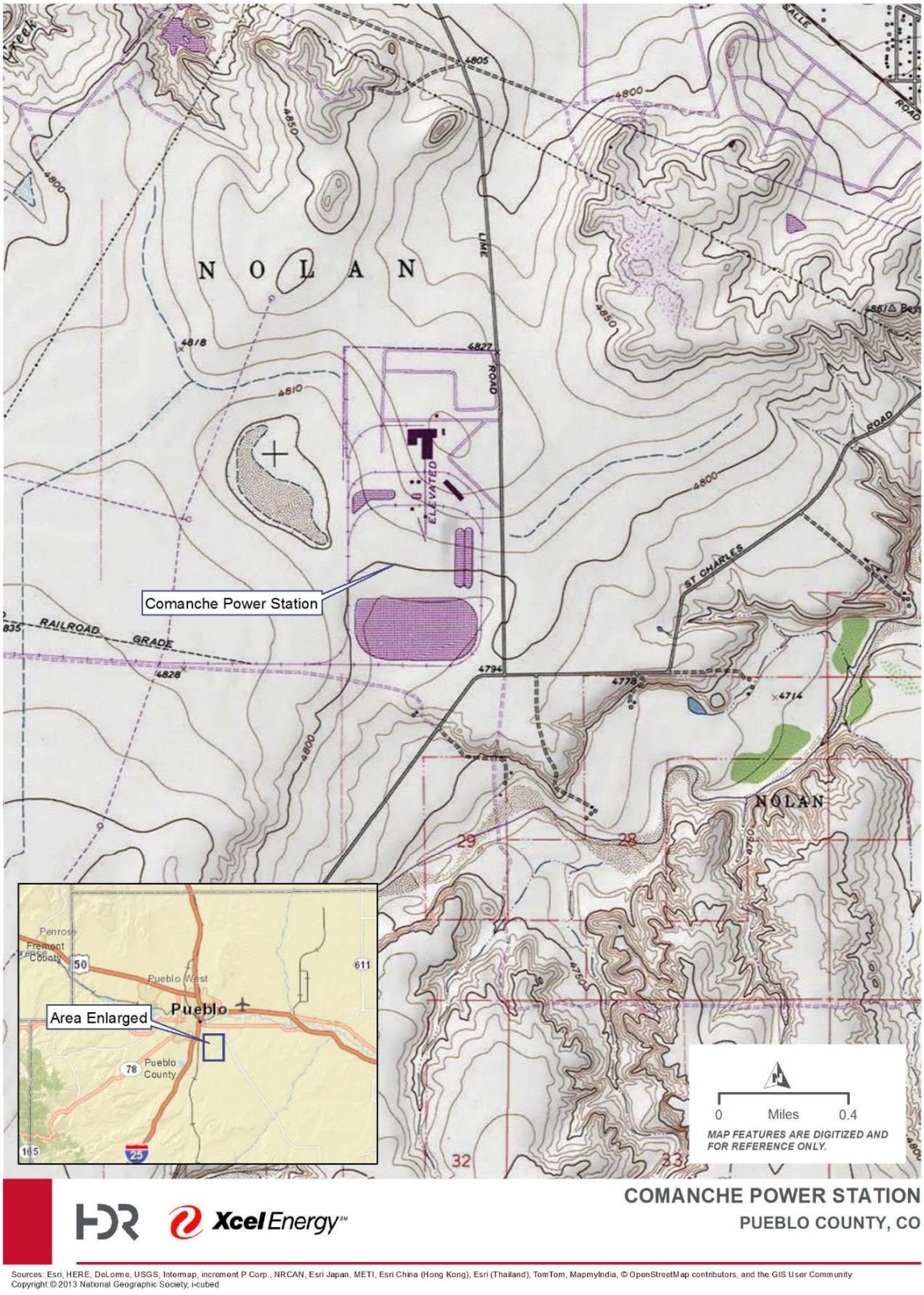

Figure 1. Vicinity map for Comanche Station.

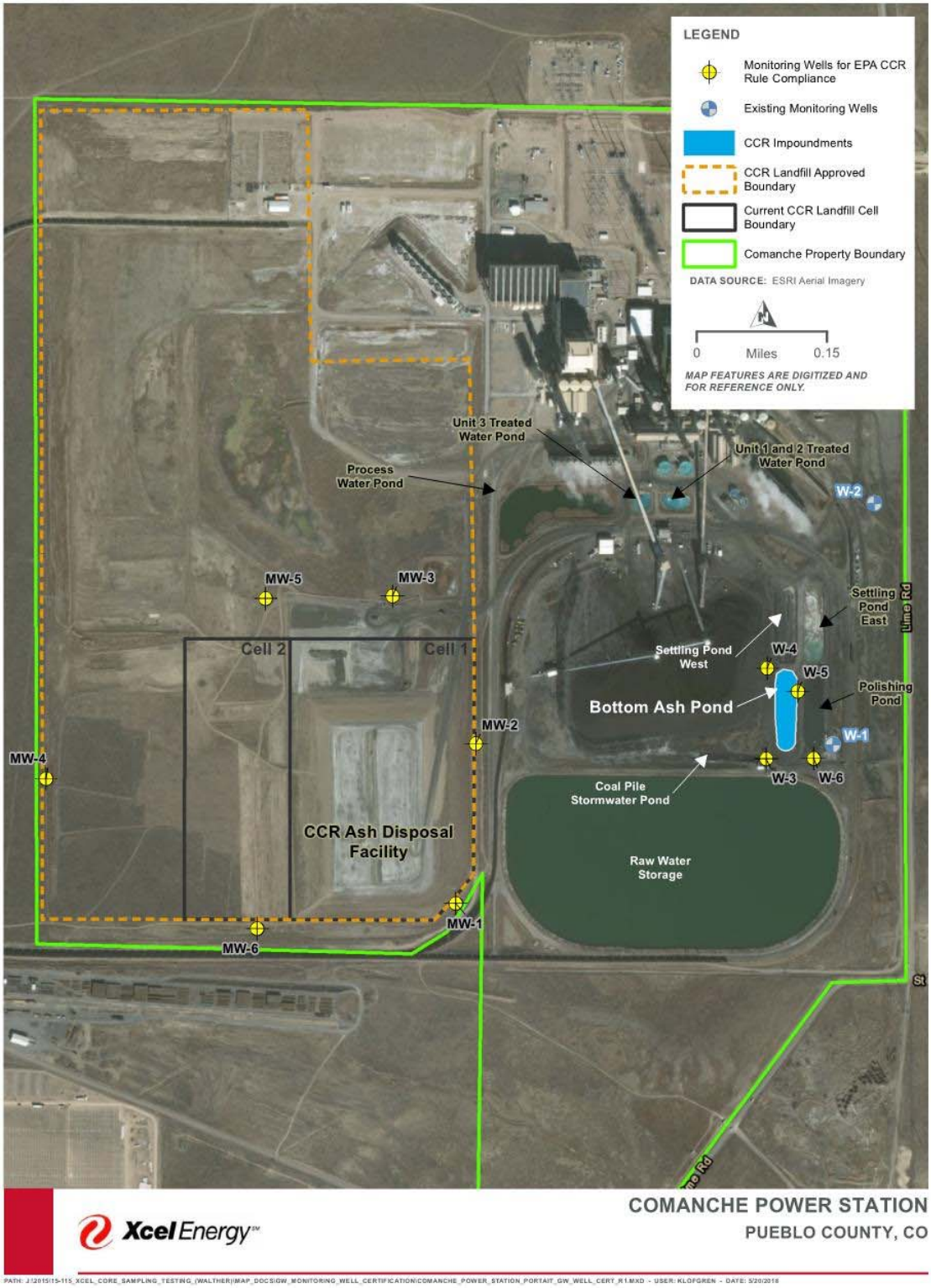

Figure 2. Comanche Station – CCR unit and monitoring well location map.

2 Perched Water Monitoring

HDR measured water levels in eight monitoring wells semi-annually in 2019. Water levels were measured January 28, 2019 and again July 24, 2019 for both the landfill and impoundment CCR facilities. Monitoring wells MW-1 through MW-4 surround the landfill. Wells MW-1, MW-2, and MW-4 were observed to be dry each quarter, consistent with previous studies. The water level in MW-3 was consistent with prior years in Januray and July 2019, varying a maximum 1.25 feet, and remained at and very near the colluvium/bedrock contact.

Monitoring wells W-3 through W-6 surround the bottom ash impoundment. In both monitoring events in 2019, measured water levels were higher in all wells than in past monitoring events. The water level in well W-4 was approximately 2 to 3 feet higher and was measured within the screened interval above the sump of the well and above the bedrock elevation. The water levels in the other wells surrounding the impoundment were approximately 1 to 3 feet higher than prior years of monitoring.

In 2020, PSCo will continue semi-annual water level monitoring and, as noted above, will resume the sampling and analysis of the perched water pursuant to CCR Rule protocols, even though such data is not from an actual aquifer.

3 Conclusions

The CCR Rule requires that the groundwater monitoring be conducted on the uppermost aquifer at each site with a regulated CCR facility. The definition of an aquifer, from the CCR Rule (40 CFR 257.53), is a geologic formation, group of formations, or portion of a formation capable of yielding usable quantities of groundwater to wells or springs. The uppermost aquifer at Comanche Station is in the Dakota Sandstone located beneath approximately 1,500 feet of Pierre Shale and therefore there is low probability of impacted from the bottom ash pond or landfill. The isolated pockets of shallow perched water in the colluvium at Comanche do not qualify as an aquifer because the yield is too low, TDS concentrations are too high, perched water is not laterally continuous, and it is not a current water supply source. The increases in water levels around the bottom ash pond in 2019 do not change the fundamental conclusion that the perched water is not an aquifer. However, PSCo will continue to monitor the wells in the program through semi-annual water level monitoring and will also resume the sampling and analysis of the perched water pursuant to CCR Rule protocols. .

Certification

Comanche Station Review of Compliance with the Coal Combustion Residuals Rule Groundwater Monitoring Program

I hereby certify to the best of my knowledge that the information provided herein is accurate and the determination of a no aquifer system is based upon the data collected for CCR Rule compliance.

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

Matthew Rohr, PE
Colorado PE License 0053467
License renewal date October 31, 2021