



# Written Closure Plan

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Comanche Station - Active CCR Surface  
Impoundment

*Public Service Company of Colorado  
Denver, Colorado*

October 17, 2016





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## Table of Abbreviations and Acronyms

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Abbreviation	Definition
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
PSCo	Public Service Company of Colorado

## 1.0 General Information

Comanche Station is a 1,450-megawatt coal-fired, steam turbine power plant owned and operated by Public Service Company of Colorado (PSCo), an Xcel Energy company. The plant is located at 2005 Lime Road, Pueblo, Colorado 81006.

In October 2015, the United States Environmental Protection Agency promulgated the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities; Final Rule (40 Code of Federal Regulations [CFR] §257 and 261) (Federal CCR Rule). The Bottom Ash Pond is subject to the requirements of the Federal CCR Rule. Per 40 CFR §257.53 the Bottom Ash Pond is defined as an incised CCR surface impoundment because it was constructed by excavation and holds an accumulation of CCR entirely below the natural ground surface.

Bottom ash from Units 1 and 2 boiler bottoms is pumped as slurry to the on-site Bottom Ash Pond for dewatering. The bottom ash is sluiced to the impoundment where solids are separated from the water in a dewatering box at one end of the pond. The box collects the larger bottom ash material and water and fines are passed through the impoundment. Dewatered bottom ash is removed from the impoundment dewatering box on a regular basis by a wheeled loader/excavator and hauled off site for encapsulated beneficial use or alternatively disposed in the on site CCR landfill.

**Figure 1** provides a Site Plan that shows the location of the Bottom Ash Pond and the CCR landfill.

In accordance with 40 CFR §257.102(b), PSCo is required to publish a written closure plan that, *“...describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices.”*

Specific to closure by removal of CCR 40 CFR §257.102(c) states,

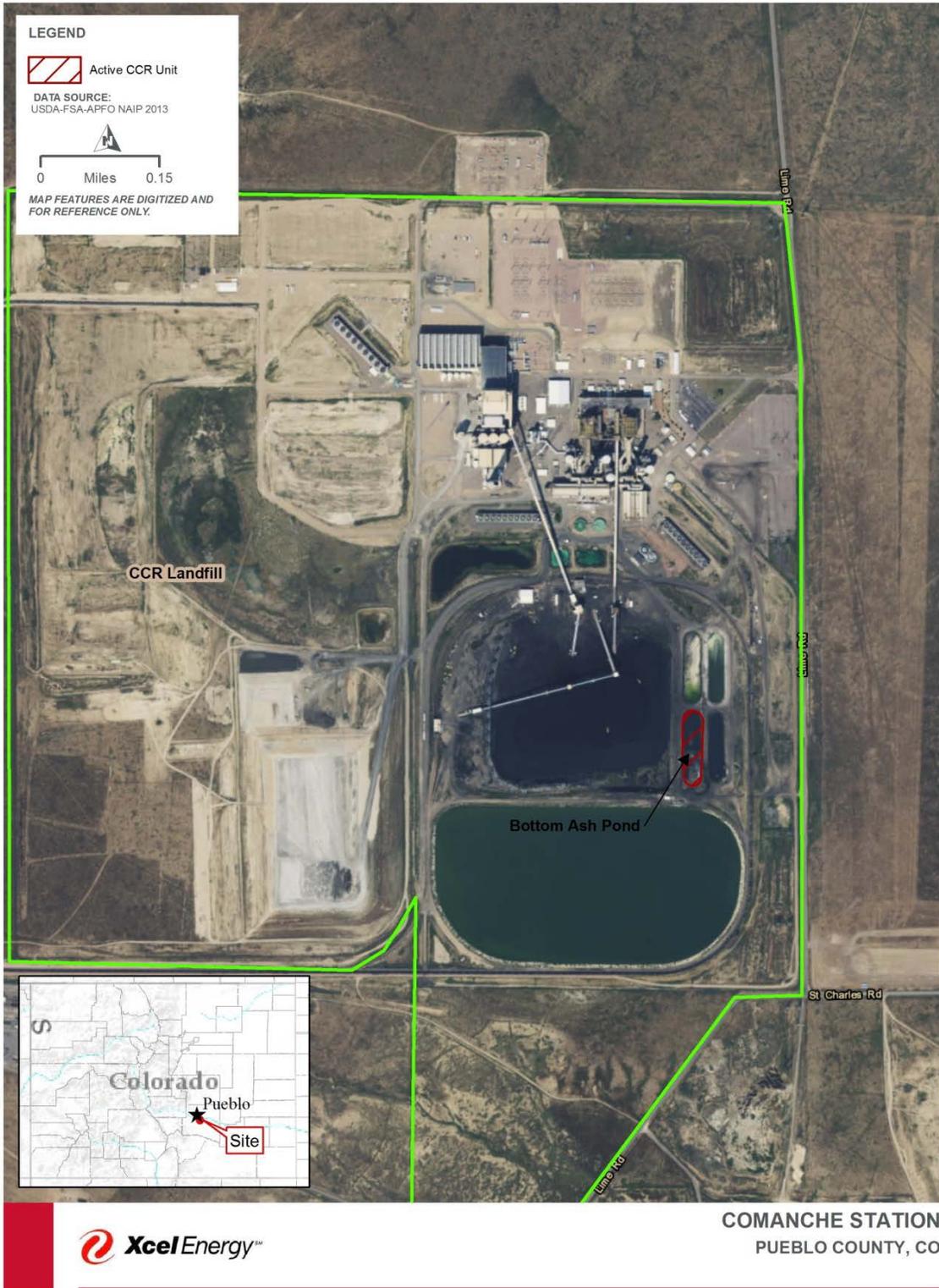
*“An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standards.”*

The Bottom Ash Pond will be closed once the Units 1 and 2 boilers no longer utilize a slurry system for managing ash from the boiler bottoms. PSCo intends to close the Bottom Ash Pond via removal of CCR and this Closure Plan fulfills the requirements of the Federal CCR Rule.

## 2.0 Description of Closure Plan – 257.102(b)(1)(i-iii)

The closure of the impoundment will be by a “clean closure” consisting of removing all CCR and residual contamination to meet unrestricted use concentrations.

All liquid and CCR will be removed from the Bottom Ash Pond. Liquid will be pumped to the facility wastewater treatment ponds and discharged under the facility wastewater permit, as it is now. CCR present in the pond will be removed and dewatered prior transport for beneficial use or disposal in the CCR landfill.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community  
Sources: Esri, DeLorme, USGS, NPS  
Sources: Esri, USGS, NOAA

Figure 1. Site Plan



The Bottom Ash Pond was constructed with a 3-foot-thick compacted clay liner; no synthetic liner materials are present. Along with the CCR material, the existing 3-foot clay liner will also be removed and disposed on in the on-site CCR landfill.

All ancillary equipment within the limits of the impoundments will be removed and disposed of in a permitted off-site landfill unless otherwise repurposed by PSCo or as otherwise indicated herein.

Once all CCR and the clay liner materials are removed, the subsurface materials will be tested to confirm all CCR materials have been removed. Sampling and testing will be completed in accordance to the requirements of 40 CFR §257.95(h). Given the pond's location relative to the facility's non-CCR process water ponds, the former CCR pond footprint has the potential to be used after clean closure to service other facility needs. Therefore, upon confirmation of clean closure, the pond footprint may be left in its current open and stable configuration. The pond is incised and any storm water that collects within the clean native soil footprint will either infiltrate or can be pumped to the adjacent polishing pond for discharge under the facility's existing discharge permit. Alternatively, the former pond footprint will be re-graded using soil from the pond embankment, or other on-site or off-site borrow sources, and seeded with appropriate grass species.

All closure work described in this plan will be conducted under the supervision of a registered Professional Engineer who will be responsible for certification of closure. Upon completion of closure activities, a notification of completion of closure will be completed per §257.102(h) and §257.105(i)(8). The notification will document that all requirements and conditions of the Closure Plan were achieved. The report will be signed and sealed by a Colorado registered Professional Engineer.

### 3.0 Inventory Estimate – 257.102(b)(1)(iv)

In accordance with 40 CFR §257.102(b)(1)(iv) an estimate of the maximum inventory of CCR ever on-site over the active life of the CCR impoundment must be provided.

Historically, the impoundment has accepted approximately 50,000 tons (40,000 cubic yards) of bottom ash annually. The impoundment is approximately 505 feet long by 140 feet wide and 20 feet deep. The impoundment has a surface area of approximately 1.6 acres.

The impoundment has a maximum volume of approximately 28,500 cubic yards.

### 4.0 Area Requiring Final Cover – 257.102(b)1(v)

Section 257.102(b)(1)(v) is not applicable as the closure will be completed by removing the CCR and decontaminating the liner area resulting in a “clean-closure.” The need for a final cover is eliminated when the owner closes the CCR unit via the clean closure option and all CCR is removed and confirmed with analytical testing results.

## 5.0 Schedule of Closure Activities – 257.102(b)1(vi)

At this time it is anticipated that the impoundment will be closed due to the implementation of the Effluent Limitation Guideline rule. The facility wastewater permit will be reissued in the 2021-2023 timeframe and will include a “zero discharge” limitation on bottom ash transport water (sluice water) due to that rule (see **Table 1**).

Table 1. Schedule of Closure Activities		
Task	Start Date	Finish Date
Written Closure Plan	October 17, 2016	October 17, 2016
Last Receipt of CCR	Ongoing	2021-2023
Impoundment Closure	2021-2023	2026-2028

## 6.0 Certification – §257.102(b)(4) and §257.102(d)(3)

In accordance with §257.102(b)(4), the owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meets the requirements of this section.

In accordance with §257.102(d)(3), the owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the design of the final cover system meets the requirements of this section.

I, Douglas T. DeCesare, being a registered Professional Engineer, in accordance with the Colorado State Board of Licensure for Architects, Professional Engineers, and Professional Land Surveyors, do hereby certify to the best of my knowledge, information, and belief, that the information contained in this written Closure Plan dated October 17, 2016, was conducted in accordance with the requirements of 40 CFR §257.102(b)(4) and §257.102(d)(3), is true and correct, and was prepared in accordance with recognized and generally accepted good engineering practices.

SIGNATURE:

Colorado PE 0051341

DATE:

October 14, 2016