

# ADMINISTRATIVE ORDER ON CONSENT ANNUAL MEETING

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## *COLSTRIP STEAM ELECTRIC STATION*



Sarah Seitz  
Colstrip Environmental Project Officer  
Waste Management & Remediation Division



# Agenda

- Introductions
- Background/AOC Overview
- Update on Progress
  - Plant Site
  - Units 1&2 Remedy
  - Units 3&4 Remedy
  - Presentation by Talen MT
    - Dry Disposal
    - Wastewater Treatment Upgrades
- Water Feasibility Study
- Units 1&2 Ponds Settlement Agreement Discussion
- What's Next & Public Participation in Future
- Questions/Comments





# INTRODUCTIONS

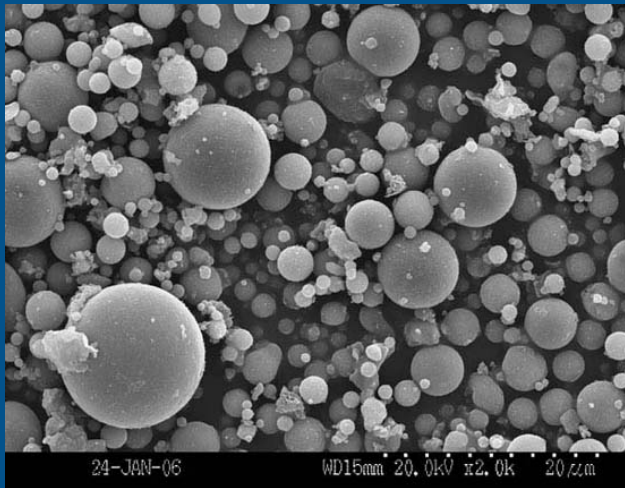
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- *Sarah Seitz – Colstrip SES Environmental Project Officer, [sarah.seitz@mt.gov](mailto:sarah.seitz@mt.gov)*
- *Katie Morris – Cleanup, Protection & Redevelopment Section Supervisor [katie.morris@mt.gov](mailto:katie.morris@mt.gov)*
- *Kevin Stone – DEQ/Project Public Information Officer, [kevin.stone@mt.gov](mailto:kevin.stone@mt.gov)*

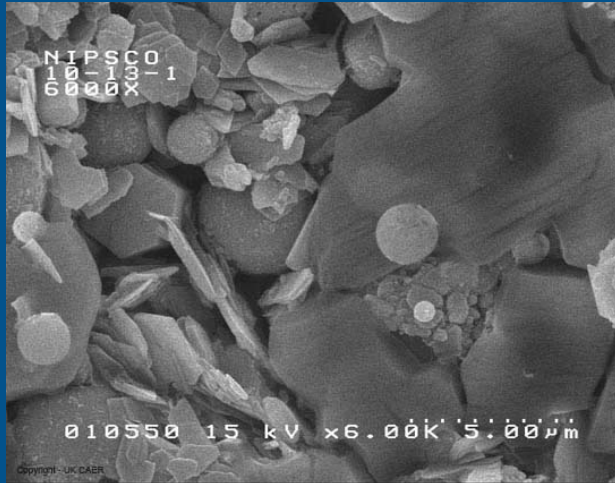


# What is Coal Ash?

- Coal Ash = Coal Combustion Residual (CCR)
  - Byproduct of burned coal
  - May contain traces of contaminants, typically metals naturally present in the coal
  - Regulated by Federal CCR Rule



Fly ash (magnified 2000x)



Bottom ash (magnified 6000x)





# Constituents of Concern or Interest (COCs or COIs)

- Colstrip Coal Ash – AOC/CCR Rule
  - CCR Appendix III:
    - **Boron, Sulfate**
  - CCR Appendix IV:
    - **Cobalt, Lithium, Selenium, Molybdenum** (Plant Site)
  - Other Potential Constituents (COIs):
    - **Manganese**

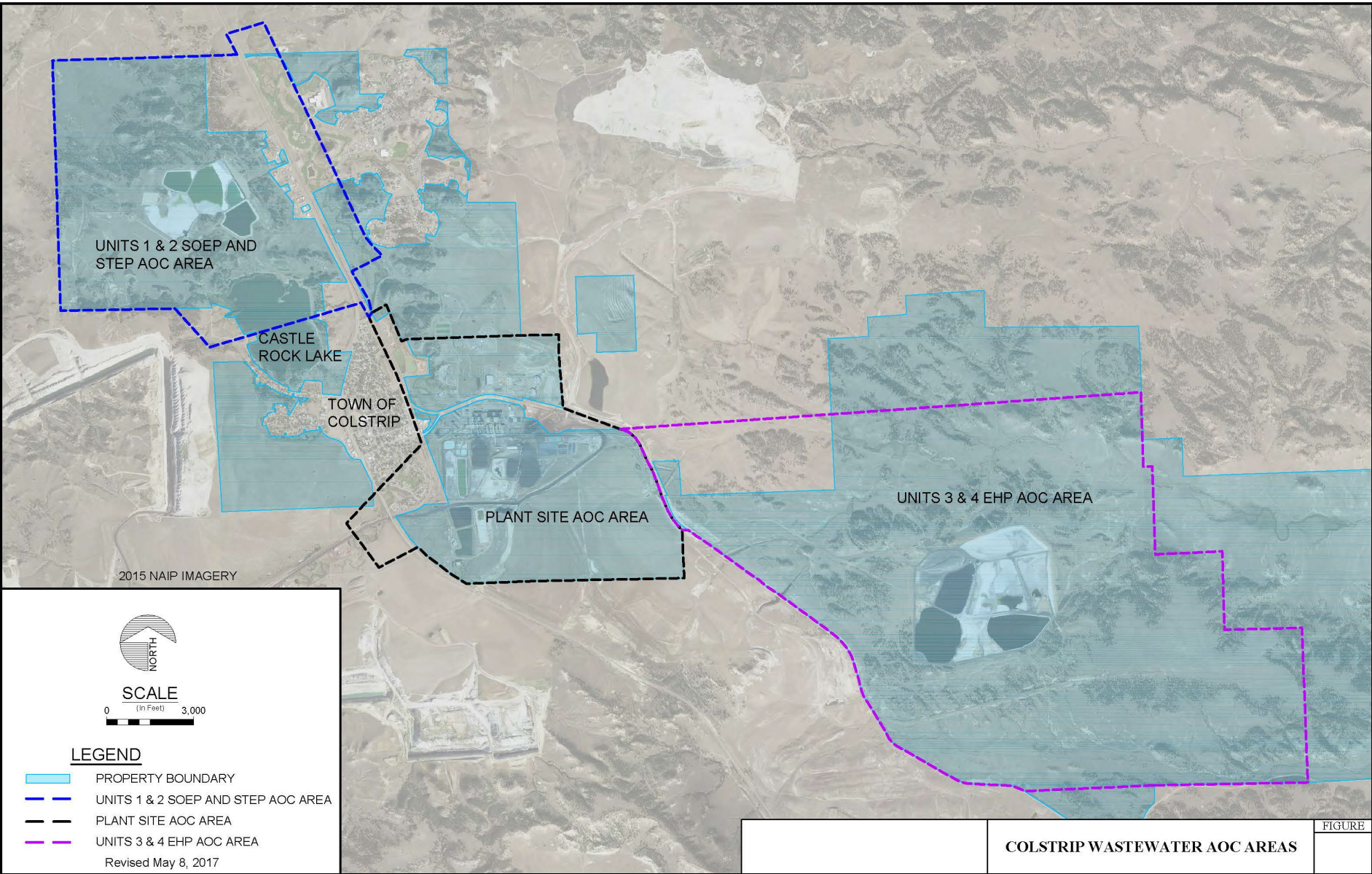




# Administrative Order on Consent (AOC)

- Addresses groundwater contamination from coal ash disposal ponds
- Divides site into 3 areas:
  - Plant Site
  - Units 1&2 Evaporation Ponds
  - Units 3&4 Effluent Holding Ponds







# AOC Process

A vertical flowchart titled 'AOC Process' is overlaid on a background image of a desert landscape. The background shows a reddish-brown rocky hillside with sparse vegetation under a cloudy sky. The flowchart consists of four blue rectangular boxes connected by downward-pointing arrows. The first box at the top contains the text 'Site Characterization Report (describes the current condition of each area)'. An arrow points down to the second box, which contains 'Cleanup Criteria & Risk Assessment Report (identifies constituents of interest, risk for exposure to contaminants, and cleanup criteria for contaminants)'. Another arrow points down to the third box, which contains 'Remedy Evaluation Report (evaluates remediation alternatives)'. A final arrow points down to the fourth box at the bottom, which contains 'DEQ selects remedy'.

Site Characterization Report (describes the current condition of each area)



Cleanup Criteria & Risk Assessment Report (identifies constituents of interest, risk for exposure to contaminants, and cleanup criteria for contaminants)



Remedy Evaluation Report (evaluates remediation alternatives)



DEQ selects remedy



# AOC Process (continued)

DEQ selects remedy



Remedial Design/Remedial Action Work Plan (implementing selected remedy)



Final Remedial Action Report (describes completed remedy)



Facility Closure Plan (long-term maintenance and monitoring)

# AOC Status

Report Name	Plant Site	Units 1&2	Units 3&4
Site Characterization Report	✓	✓	✓
Background Screening Level Report	✓	✓	✓
Cleanup Criteria & Risk Assessment Report	✓	✓	✓
Remedy Evaluation Report	✓	✓	✓
Remedial Design/Remedial Action Report	✓	--	✓
Final Remedial Action Report	--*	--	--
Closure Plans	✓	✓*	✓

✓ = Approved by DEQ

✓ = Under review/Conditional

-- = Not yet submitted



# AOC Financial Assurance

Colstrip Owners	Financial Assurance (FA) Provided as of 12/01/2020 <sup>1</sup>
Talen <sup>2</sup>	\$58.7 million
Puget Sound Energy <sup>2</sup>	\$71.7 million
Northwestern Energy	\$19.5 million
Portland General Electric	\$26.0 million
Avista	\$19.5 million
PacifiCorp	\$13.0 million
Total	<b>\$208.3 million</b>

1: DEQ revisits and reviews FA annually

2: Includes \$21.6M from Talen and \$21.6M from Puget Sound toward Units 1&2 Remedy/Closure



# Coal-Fired Generating Unit Remediation Act

- MCA §75-8-101 through 109 (2017 Legislative Session)
- Requires Colstrip owners to submit a remediation plan within 90 days of shutdown
- The purpose of this plan was to provide remediation information for items not covered under the AOC – primarily in operations areas



# Coal-Fired Generating Unit Remediation Act

- Due to safety and other considerations related to operation of Units 3&4, demolition and removal will be deferred until after Units 3&4 are retired
- Periodic inspections
- Future use of land = industrial (primarily)
- Remediation measures will comply with 75-8-107, requiring contractors and subcontractors to use a skilled and trained workforce and pay the standard prevailing rate of wages.

# Coal-Fired Generating Unit Remediation Act

## Universal Wastes

- Consists of lamps/bulbs, mercury devices, batteries and electronic wastes
- Quantities have been identified and will be disposed of in accordance with ARM regulations
- Include table of quantities

Material	Approximate Quantity	Units
Mercury Devices	80-130	each
Batteries	200-250	each
CFC	215	units
Light Bulbs and Ballast	throughout	each
Fire Extinguishers	34	each
E-Waste	200-250	each





# Coal-Fired Generating Unit Remediation Act

## Asbestos

Material	Approximate Quantity	Units
Flooring Paper	10	square feet
Coating Under Lab Sinks	20	square feet
Roof Flashing	300	square feet
Plaster	125	square feet
Floor Tile Mastic	432	square feet
Steam Drum Calk	68	linear feet
Boiler 2 Calk	74	linear feet
*Turbine Shell Interior Coating	8,500	square feet
*Spray on Cable Insulation	9,400	linear feet
Spray on Electrical Cabinets	6,500	square feet
*Lab Counter Tops	48	square feet
*Roofing Material	5,500	square feet

\*indicated presumed asbestos containing materials (PACM)

# Coal-Fired Generating Unit Remediation Act

Polychlorinated biphenyl (PCB) wastes

Regulated under the Toxic Substances Control Act (TSCA), with US EPA having regulatory authority

- Potential materials at Colstrip include fluorescent lighting ballasts and high intensity discharge fixtures, small transformers, capacitors and ballasts, oil, and building materials such as caulk, glazing and paint
- Potential PCB materials will be sampled and properly disposed of if determined to contain PCBs



# Coal-Fired Generating Unit Remediation Act

## Other Regulated Material, Including Hazardous Material

- Includes lubricating oils, hydraulic oils, non-PCB transformer oils, fuel and waste oil, fire extinguishers, refrigerants, and devices containing small amounts of nuclear materials (e.g., exit signs, smoke detectors, coal handling density gauges).
- Initial site reconnaissance identified products containing hazardous substances; these will be tracked and disposed of per applicable waste regulation

# Coal-Fired Generating Unit Remediation Act

Petroleum Releases: Two known petroleum release sites in the Units 1&2 area:





# AOC Remedy Progress

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- Plant Site
  - Remedial Design/Remedial Action Work Plan – moving toward full design
  - Annual Performance Evaluation for Plant Site Remedy – Plant Site Flushing/Capture System
- Units 1&2 SOEP/STEP
  - Remedy Evaluation Report Finalized/Approved – moving toward Remedial Design/Remedial Action Work Plan
  - Alternative 10 Selected (Talen invoked dispute resolution)
  - Settlement Agreement Oct 2021
- Units 3&4
  - Cleanup Criteria/Risk Assessment – Approved in Jan 2020
  - Finalize Remedy Evaluation – 2021 – Conditional Approval
  - Incorporate additional elements into Remedial Design/Remedial Action Work Plan



# AOC Status

Report Name	Plant Site	Units 1&2	Units 3&4
Site Characterization Report	✓	✓	✓
Background Screening Level Report	✓	✓	✓
Cleanup Criteria & Risk Assessment Report	✓	✓	✓
Remedy Evaluation Report	✓	✓	✓
Remedial Design/Remedial Action Report	✓	--	✓
Final Remedial Action Report	-- <sup>*</sup>	--	--
Closure Plans	✓	✓*	✓

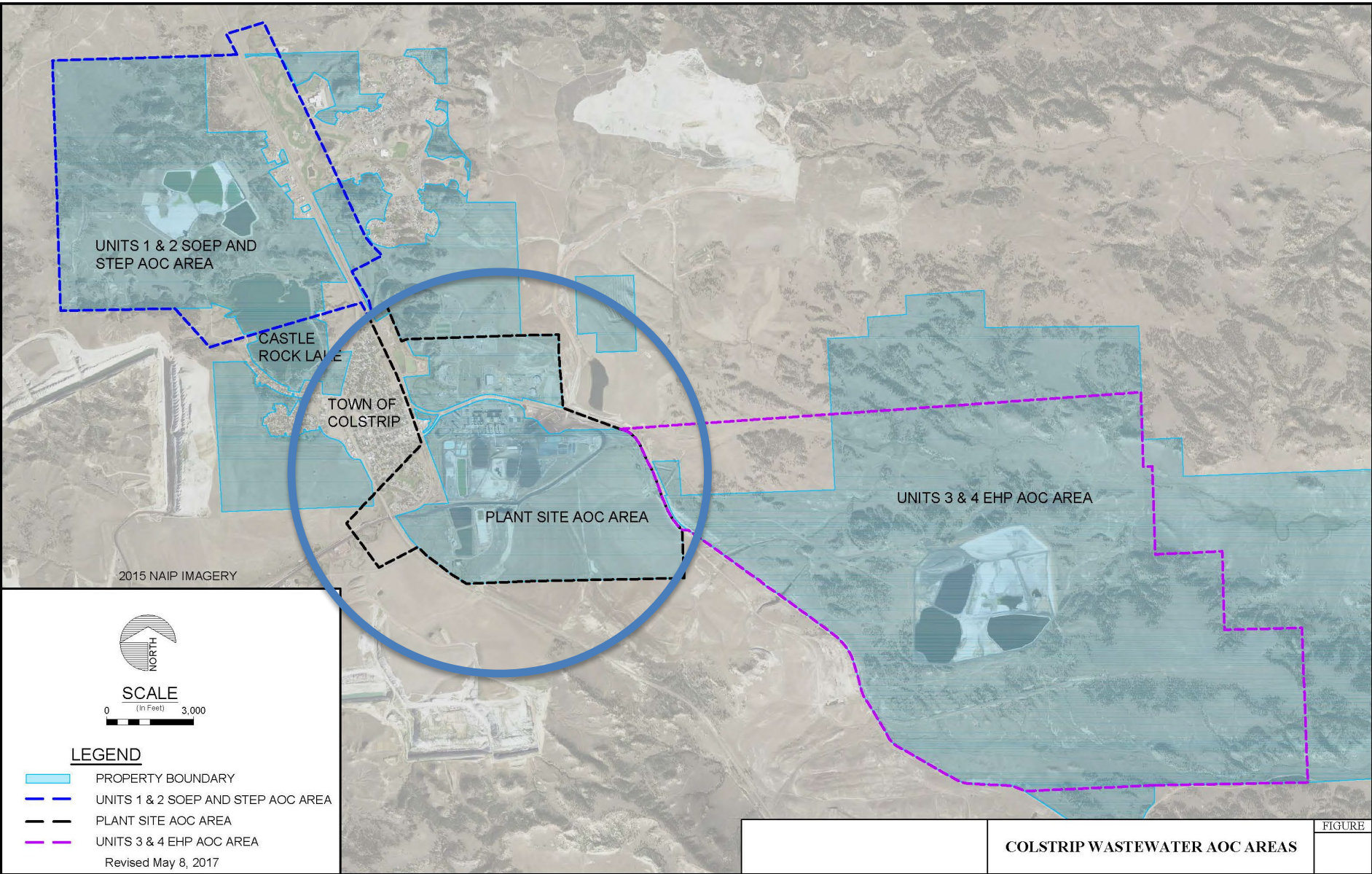
Annual Progress Report (>1yr remedy)

✓ = Approved by DEQ

✓ = Under review/Conditional

-- = Not yet submitted





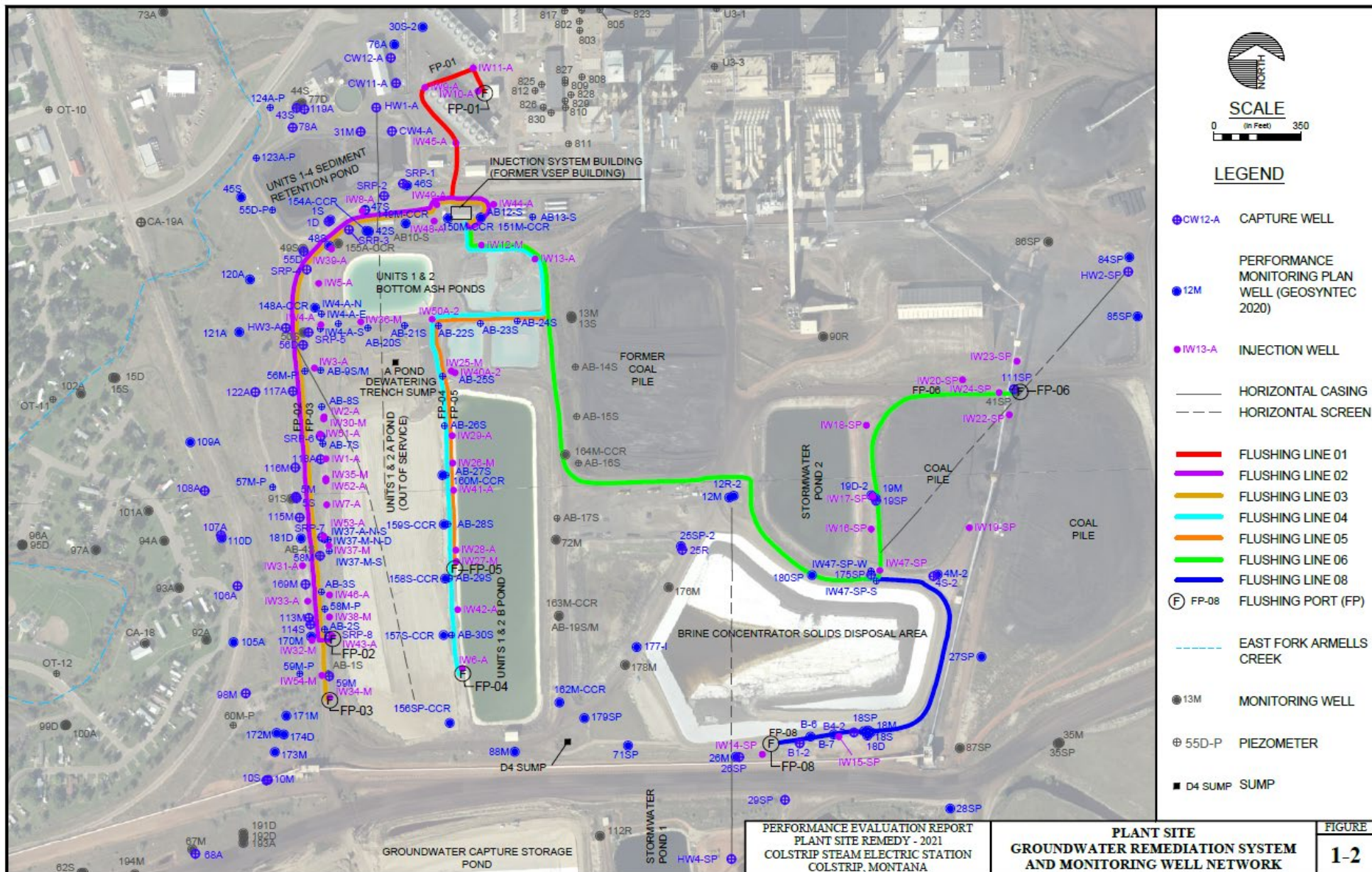




# Plant Site

- Remedy addresses groundwater contamination from coal ash process/disposal ponds
- 2021 Activities
  - Biannual groundwater monitoring
  - Operation of flushing/capture system
  - Groundwater Capture Pond
  - Annual Flushing/Capture system report in review





UPDATE TIME: 9:17 AM  
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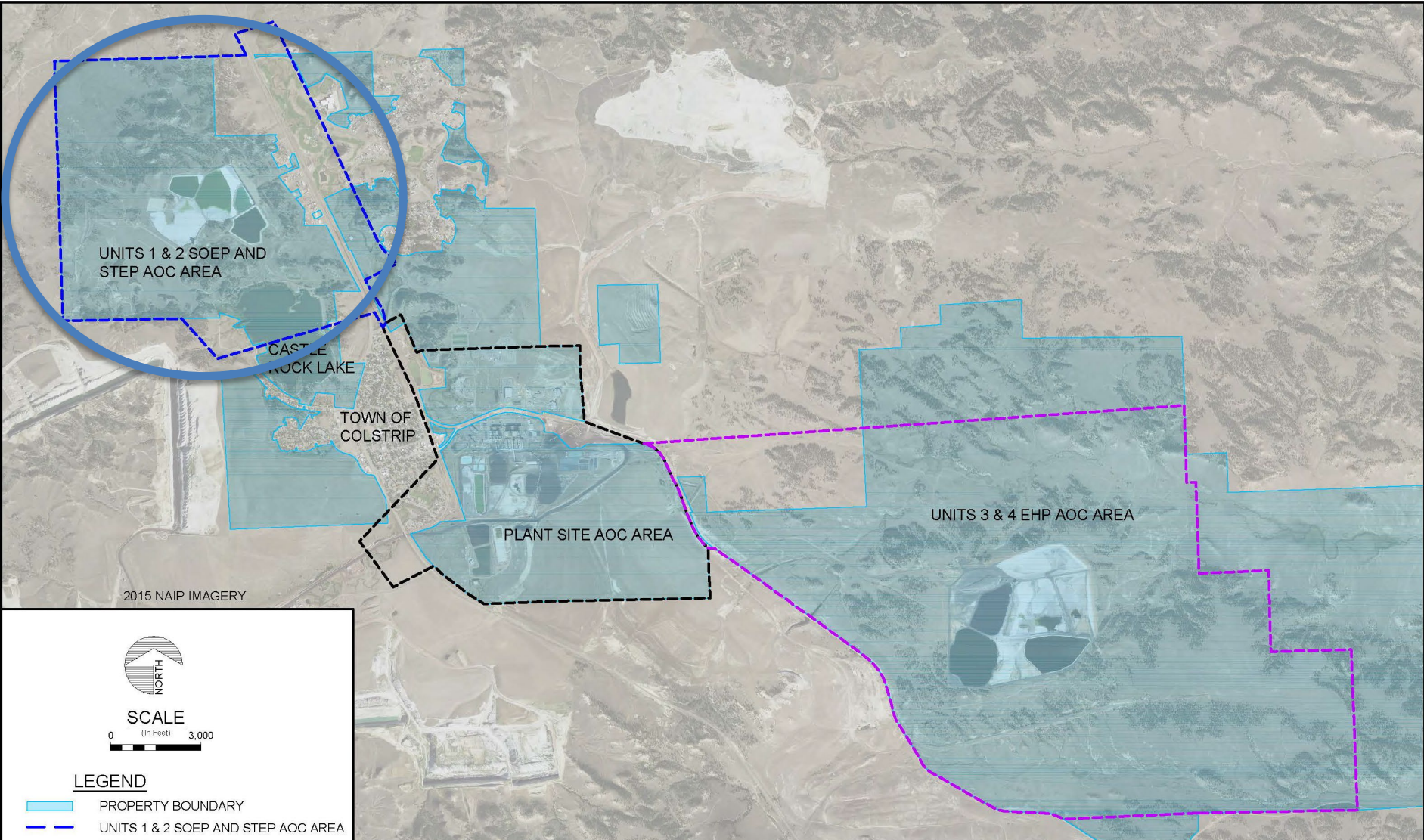






Groundwater  
Capture Pond





SCALE

0 (In Feet) 3,000



**LEGEND**

- PROPERTY BOUNDARY
- UNITS 1 & 2 SOEP AND STEP AOC AREA
- PLANT SITE AOC AREA
- UNITS 3 & 4 EHP AOC AREA

Revised May 8, 2017

COLSTRIP WASTEWATER AOC AREAS

FIGURE

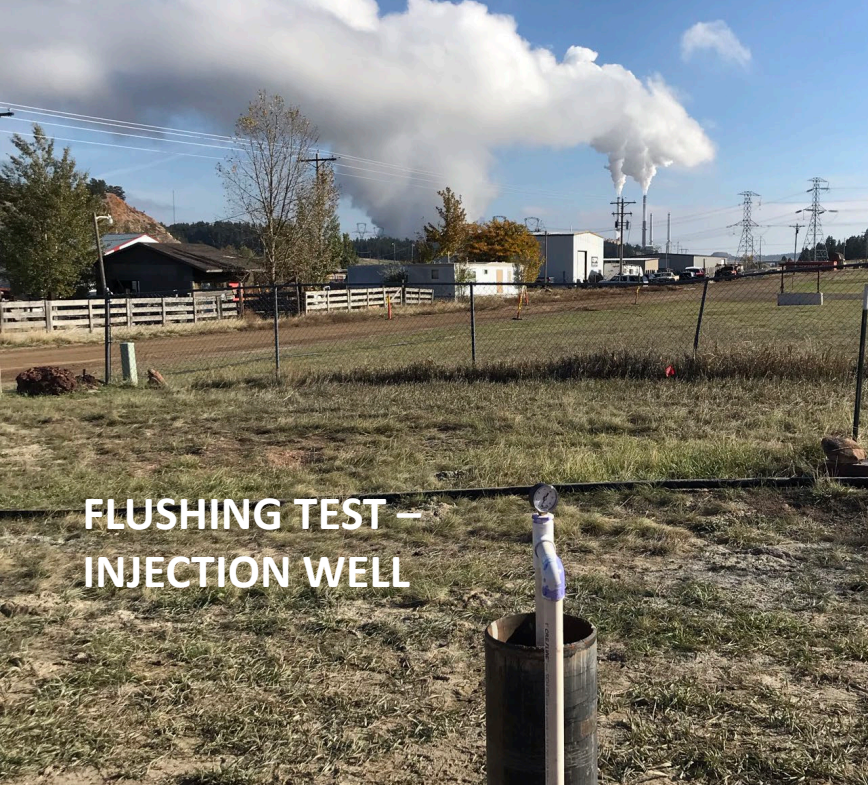




# Units 1&2 Coal Ash Ponds

- Remedy selected addresses groundwater contamination from coal ash process/disposal ponds – Alternative 10
- 2021 Activities
  - Biannual groundwater monitoring
  - Remedy selected
    - Settlement Agreement
  - Remedy Design starting
    - Flushing/Capture Pilot Test





**FLUSHING TEST –  
INJECTION WELL**



**FLUSHING TEST –  
CLEAN WATER  
STORAGE AND  
WELL**

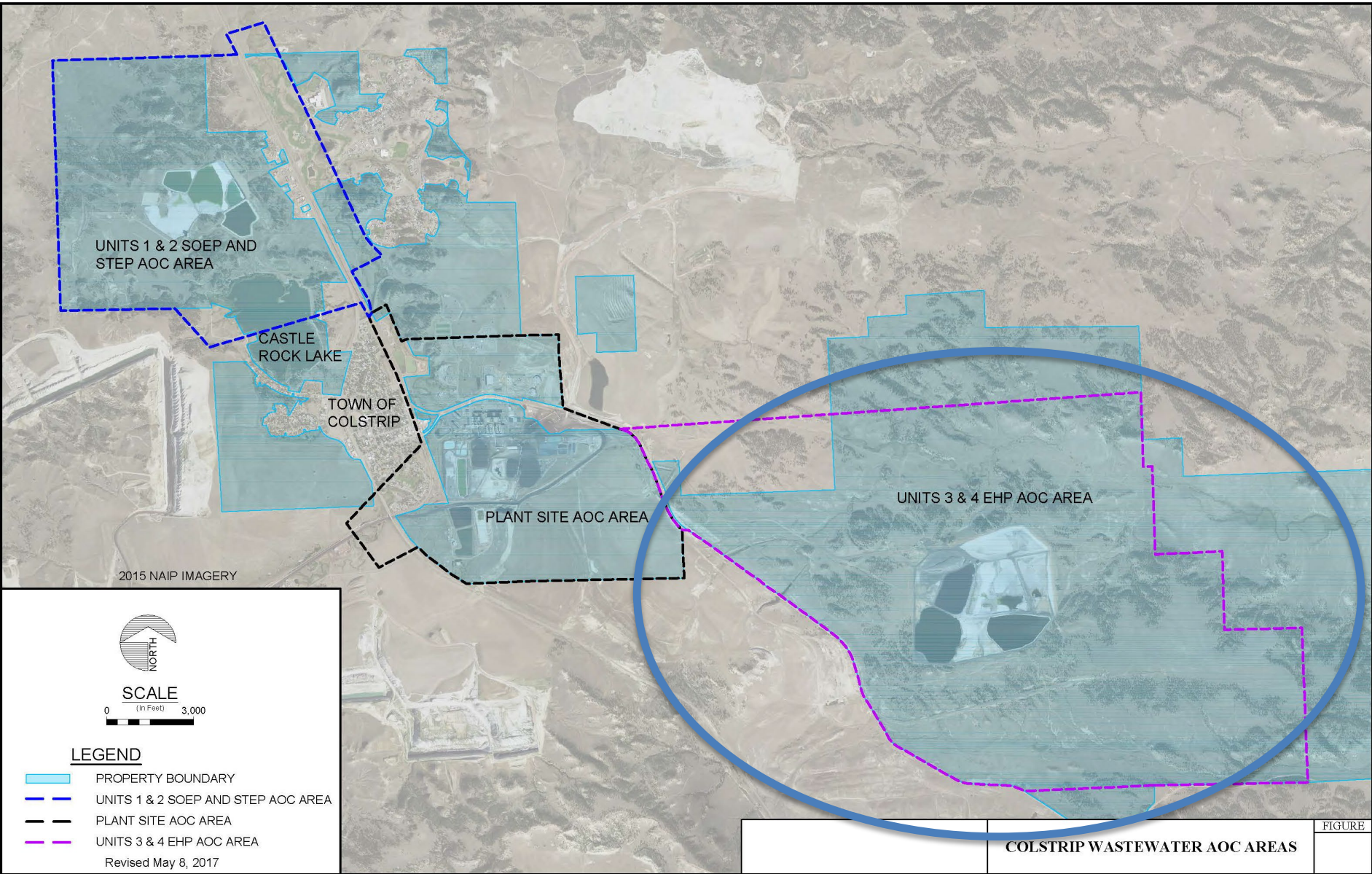


**FLUSHING TEST –  
CAPTURE WELL**



**FLUSHING TEST –  
TRANSDUCERS IN NEARBY  
WELLS FOR INFLUENCE  
MONITORING**





UPDATE TIME: 8:50 AM  
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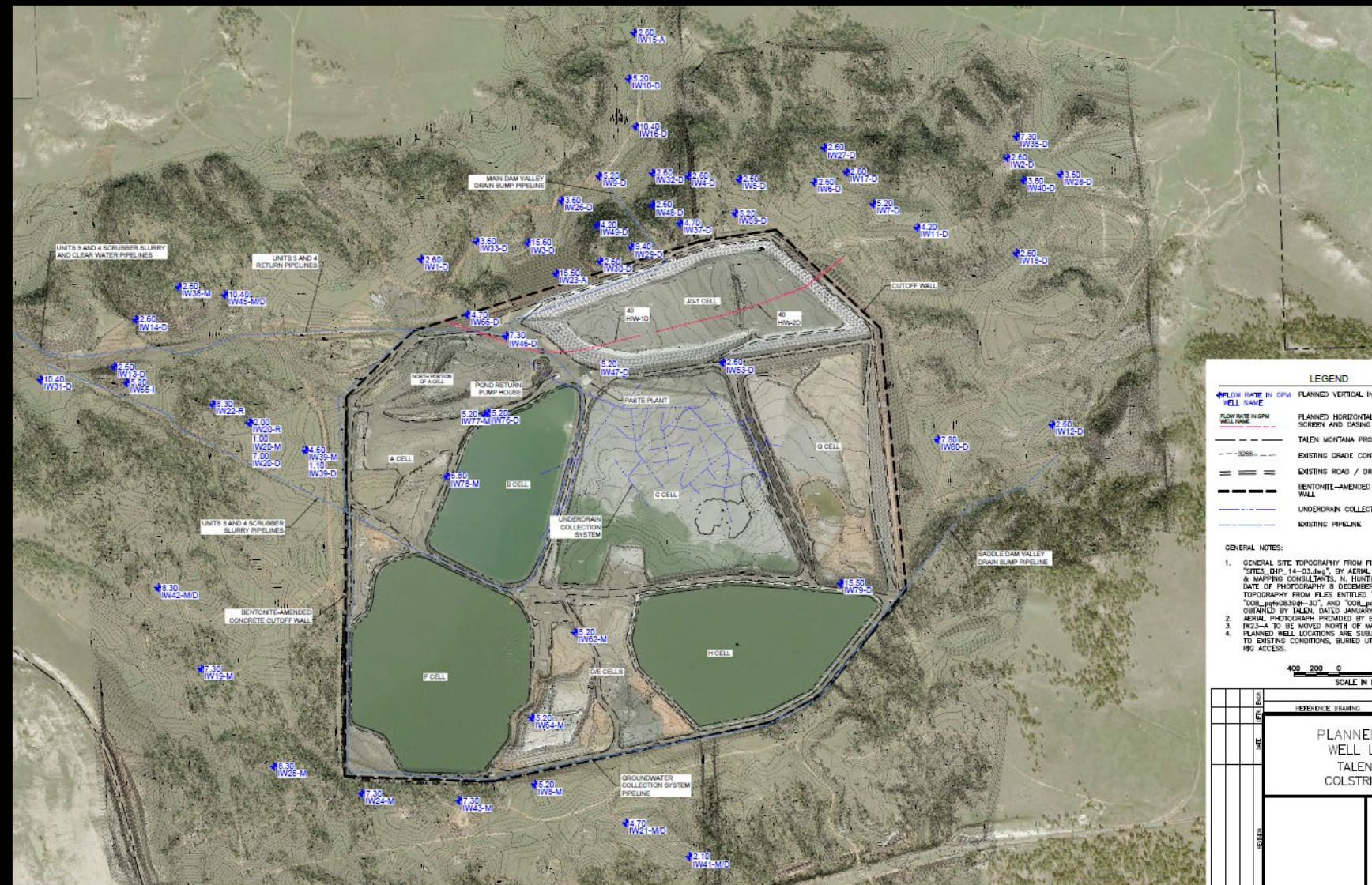




# Units 3&4 Coal Ash Ponds

- Remedy selected – Conditional Approval
  - Cell Upgrades & Closures
  - Flushing Capture
- 2021 Activities
  - Continued monitoring – groundwater
  - RER and RD/RA Work Plan
  - Remedy Design cont.
    - Flushing/Capture Pilot Test
    - MNA
    - Dry disposal installation





LEGEND	
<div> <div>2.50</div> <div>IW15-A</div> </div>	PLANNED VERTICAL INJECTION WELL
<div> <div>2.50</div> <div>IW10-C</div> </div>	PLANNED HORIZONTAL INJECTION WELL
<div> <div>2.50</div> <div>IW16-D</div> </div>	SCREEN AND CASING
<div> <div>2.50</div> <div>IW16-D</div> </div>	EXISTING GRADE CONTOUR (FEET-MSL)
<div> <div>2.50</div> <div>IW16-D</div> </div>	EXISTING ROAD / DRIVE
<div> <div>2.50</div> <div>IW16-D</div> </div>	BENTONITE-AMENDED CONCRETE CUTOFF WALL
<div> <div>2.50</div> <div>IW16-D</div> </div>	UNDERDRAIN COLLECTION SYSTEM
<div> <div>2.50</div> <div>IW16-D</div> </div>	EXISTING PIPELINE

- GENERAL NOTES:
1. GENERAL SITE TOPOGRAPHY FROM FILE ENTITLED "SITES\_DHP-14-03.dwg" BY AERIAL DESIGN DATA SURVEY & MAPPING CONSULTANTS, N. HUNTINGDON, PENNSYLVANIA. DATE OF PHOTOGRAPHY 8 DECEMBER 2014. ADDITIONAL SITE TOPOGRAPHY FROM FILES ENTITLED "007\_p4598276ad-30", "008\_p4598276ad-30", AND "009\_p4598276ad-30" WERE OBTAINED BY TALEN, DATED JANUARY 2020.
  2. AERIAL PHOTOGRAPH PROVIDED BY BING MAPS.
  3. IW23-A TO BE MOVED NORTH OF MAIN DAM.
  4. PLANNED WELL LOCATIONS ARE SUBJECT TO CHANGE DUE TO EXISTING CONDITIONS, BURIED UTILITIES AND DRILLING NO ACCESS.



REFERENCE DRAWING		DRAWING NUMBER	
<div> <div> <div>PLANNED INJECTION WELL LOCATIONS</div> <div>TALEN MONTANA COLSTRIP, MONTANA</div> </div> </div>			
<div> <div> <div>COLSTRIP POWER PLANT</div> </div> </div>		<div> <div> <div>SCALE: 1" = 400'</div> </div> </div>	

NOT FOR CONSTRUCTION





A photograph of a construction site for a horizontal injection well. In the foreground, a black pipe with white sections is laid out on a wooden pallet. A black plastic wellhead is also on the pallet. In the background, a silver pickup truck and a yellow truck are parked on a dirt road. The site is on a grassy hillside with some orange safety fencing.

**HORIZONTAL  
INJECTION  
WELL –  
FLUSHING  
PILOT TEST**



A photograph of a large industrial construction site under a cloudy sky. A red crane is lifting a large metal structure. In the background, there are several large industrial buildings and a white tent. The ground is dirt and gravel.

**INSTALLATION  
OF DRY  
DISPOSAL  
SYSTEM**





# Talen Montana Presentation

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A photograph of an industrial facility, likely a power plant, situated on the shore of a large body of water. Several tall smokestacks are visible, with thick white plumes of smoke or steam rising from them into a clear blue sky. The foreground shows the calm surface of the water.

Montana DEQ's mission is **to champion a healthy environment for a thriving Montana.**

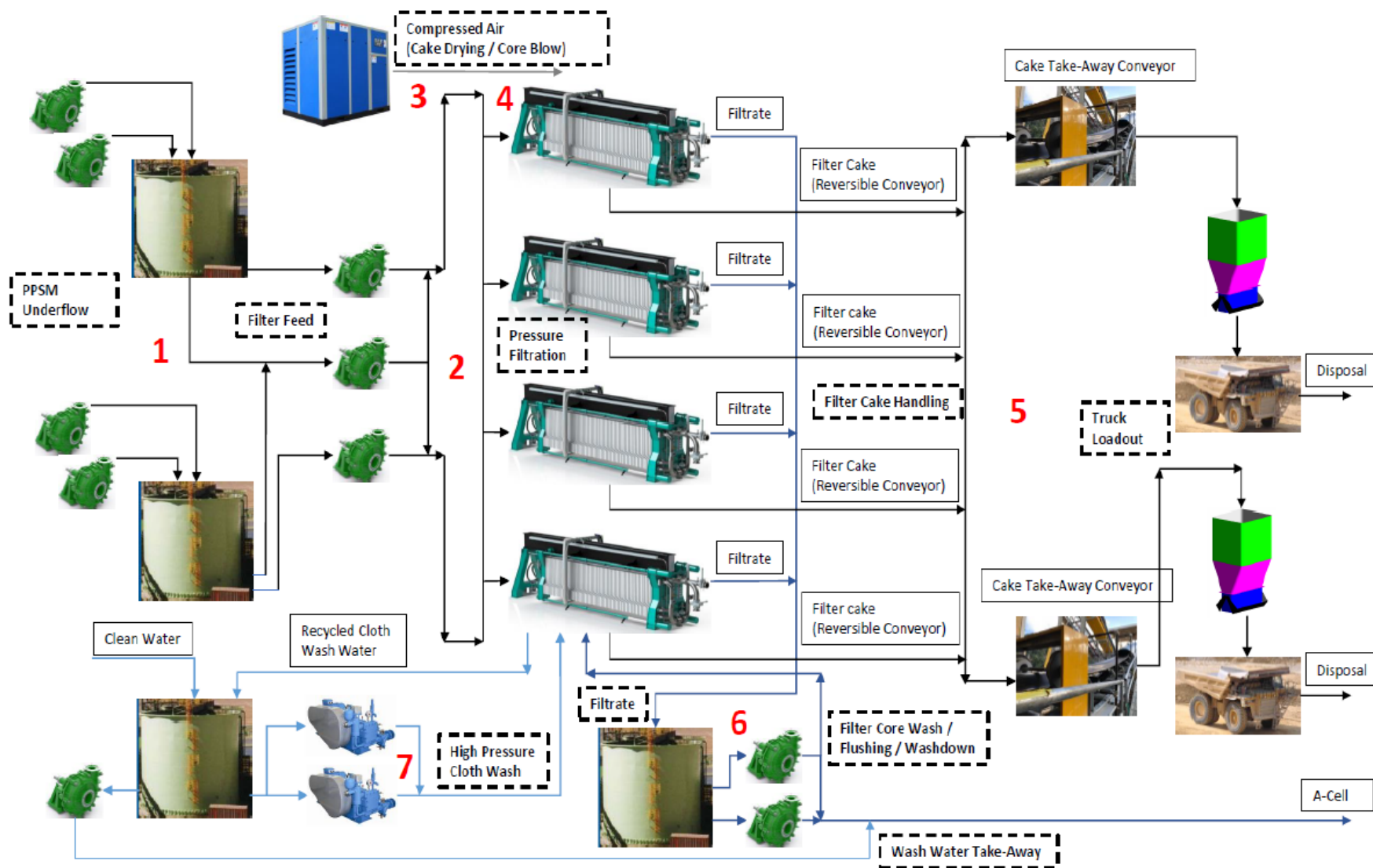
# **Colstrip 3&4 Dry Disposal Project**



- **Dry Disposal System - \$38 million**
  - In combination with the existing Paste Plant, dewaterers scrubber slurry (ash & calcium sulfate), utilizing pressure filtration, to provide a dry disposal process
  - Helps prevent potential seepage and provides additional protection to groundwater
- **Construction started in Fall 2020**
- **Construction scheduled for completion May 1, 2022**
- **Startup and tuning scheduled from 5/1/22 – 7/1/22**
- **Full operation scheduled for 7/1/22**



# Colstrip 3&4 Dry Disposal Project



# Colstrip 3&4 Dry Disposal Project

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# Colstrip 3&4 Dry Disposal Project

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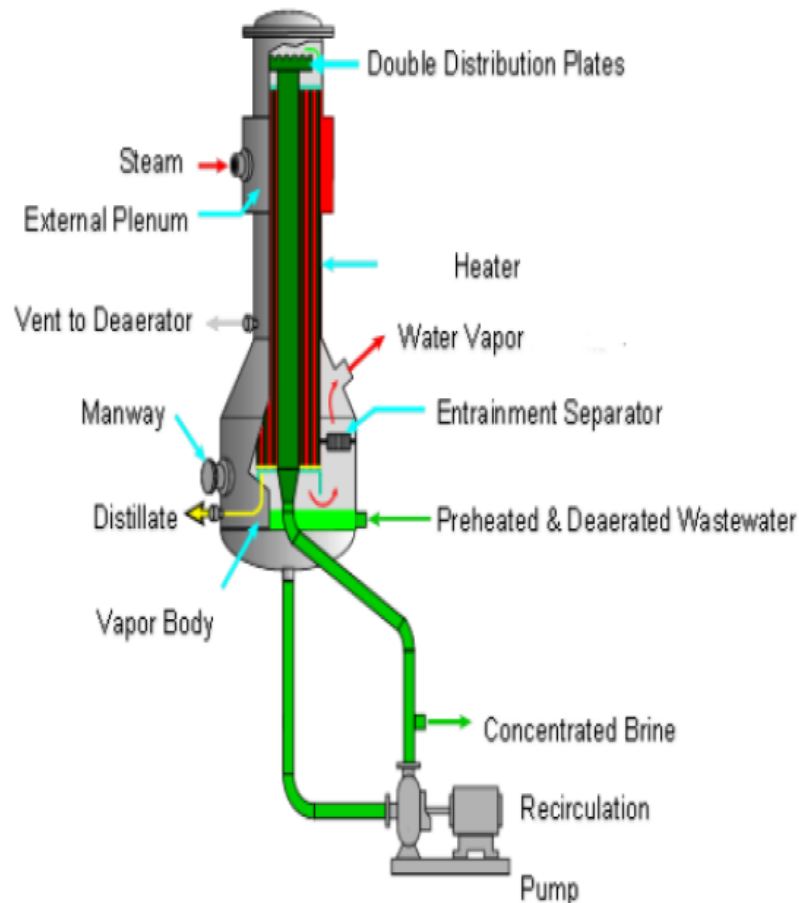
# **Colstrip Wastewater AOC GWCTS**



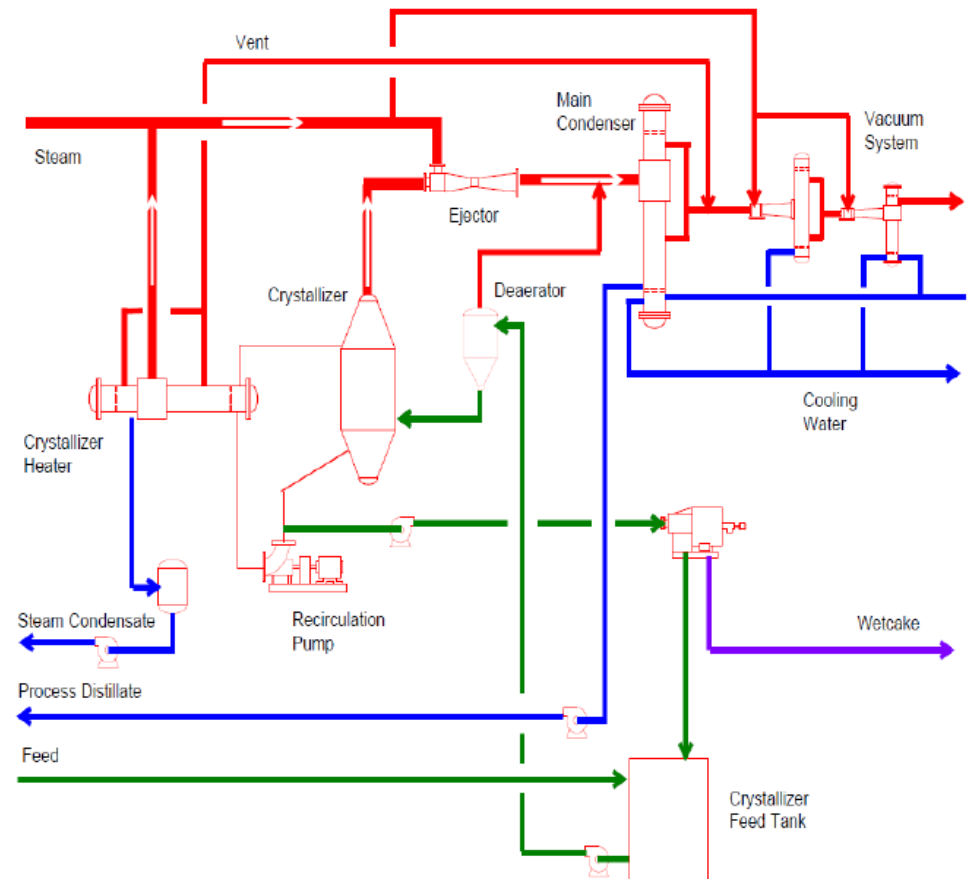
- Groundwater Capture Treatment System (GWCTS)
  - Recovery system to treat captured groundwater
  - Falling Film Evaporator technology including a low temperature, vacuum crystallization process
  - \$35 million
- Construction started in 2020
- Construction scheduled for completion Spring 2022
- Startup and tuning scheduled from 5/1/22 – 8/1/22
- Full operation scheduled for 8/1/22



# Groundwater Capture Treatment System



Falling Film Evaporator



Crystallizer

# Groundwater Capture Treatment System





# Groundwater Capture Treatment System

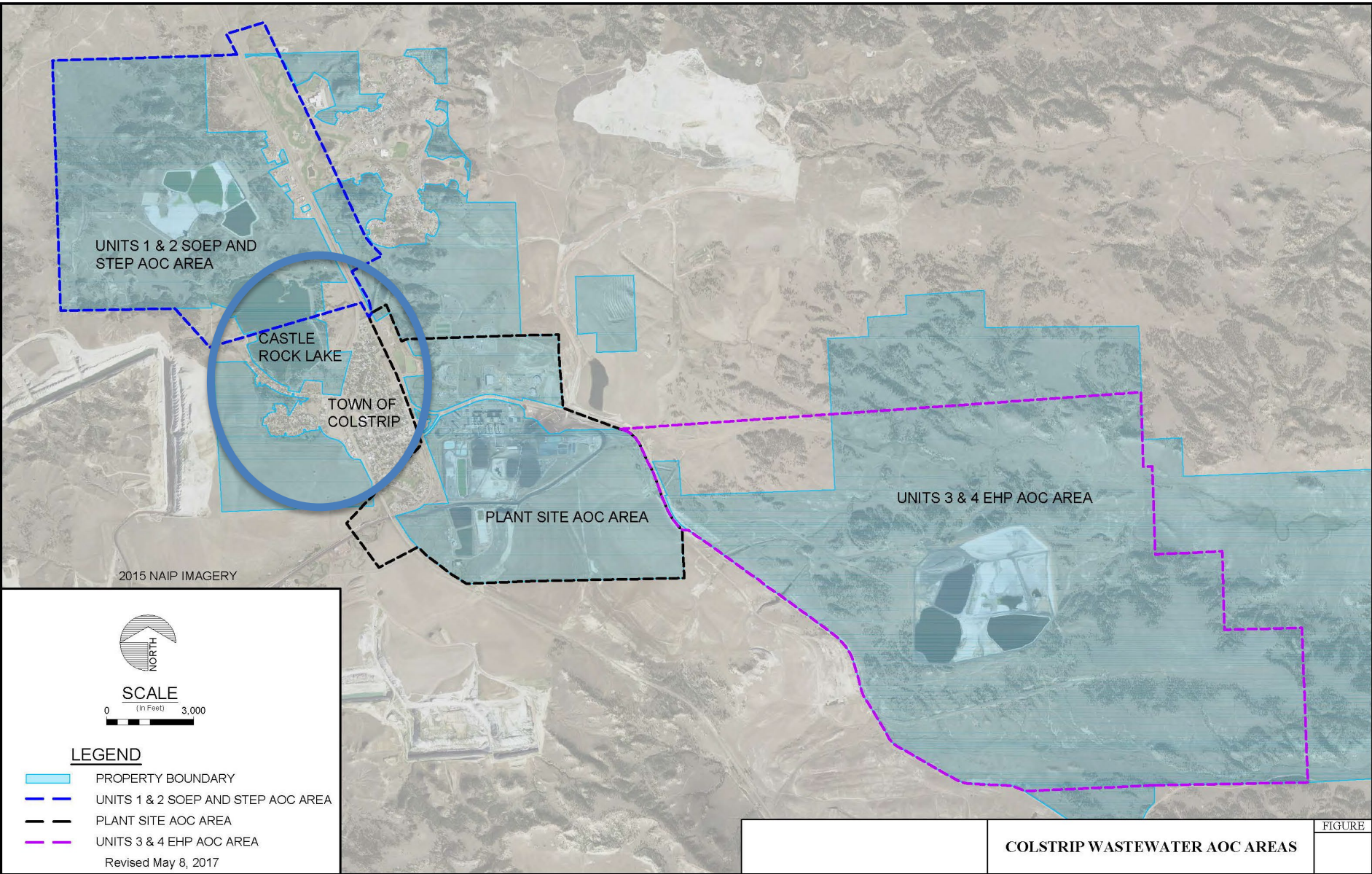




# Groundwater Capture Treatment System





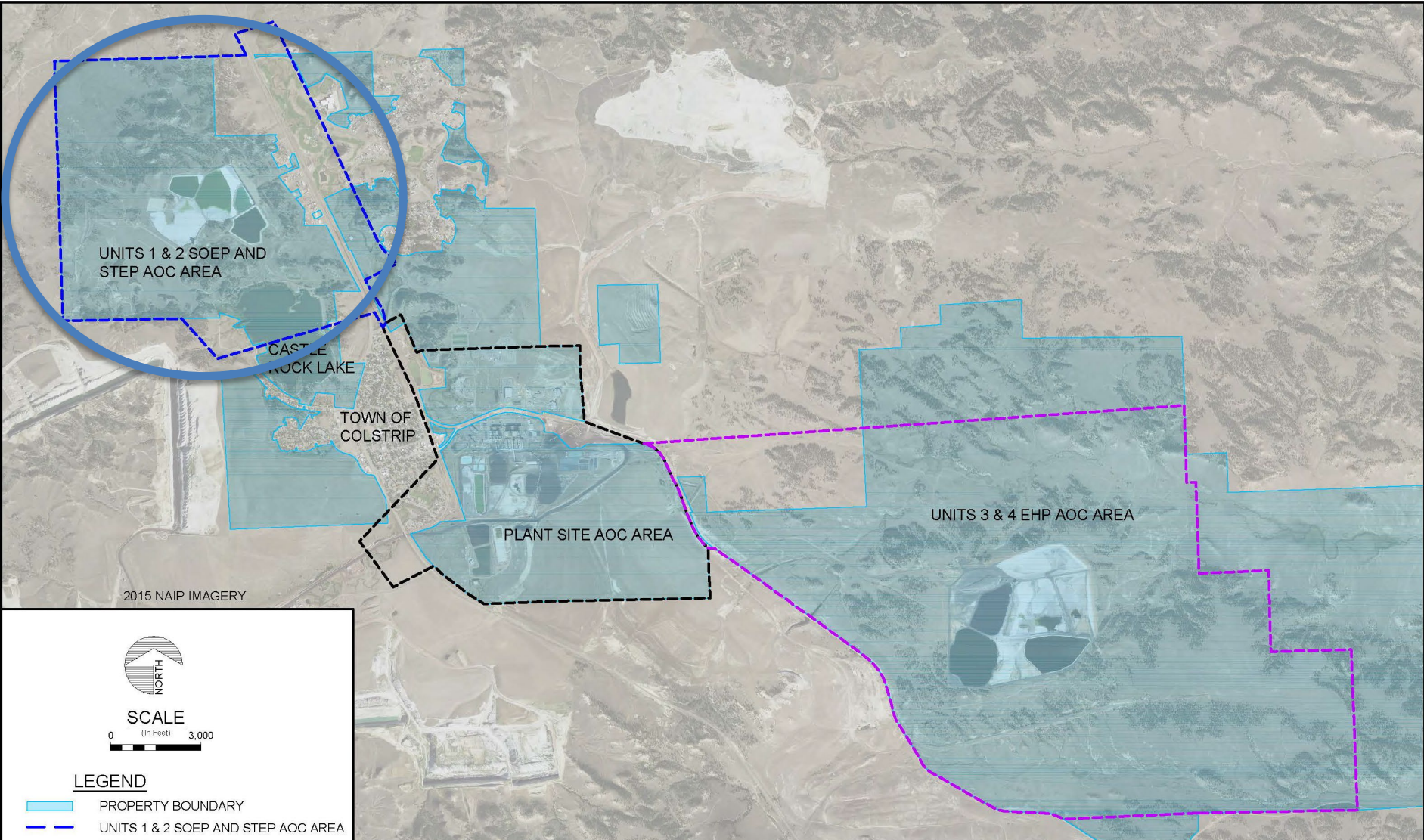




# Water Feasibility Study – SB87

- 2021 Legislative Action to modify MCA – Coal-Fired Generating Unit Remediation Act
  - Requires water feasibility study to be completed by operator by Nov. 1, 2022 to evaluate water resources and costs associated with those resources for local government (City of Colstrip)





SCALE

0 (In Feet) 3,000



**LEGEND**

- PROPERTY BOUNDARY
- UNITS 1 & 2 SOEP AND STEP AOC AREA
- PLANT SITE AOC AREA
- UNITS 3 & 4 EHP AOC AREA

Revised May 8, 2017

COLSTRIP WASTEWATER AOC AREAS

FIGURE





# Units 1&2 Coal Ash Ponds Settlement Agreement

- Phase I: Understanding the issues Talen had with DEQ's decision
- Phase II: Agreement in Principle
- Phase III: Settlement Agreement Reached – October 18, 2021





# Units 1&2 Coal Ash Ponds Settlement Agreement

- DEQ Retain Alternative 10
  - Deadlines for deliverables
  - RD/RA Work Plan Proposal
    - Jan. 31, 2022
  - RD/RA Work Plan
    - 18-months after signature
  - Landfill Application Information
    - 2 years after signature
  - Stipulated Penalties



# Units 1&2 Coal Ash Ponds Settlement Agreement

- Alternative 10 Remedy
  - Financial Assurance
  - \$163,324,678.99
- Request to Amend
  - Single Alternative 11A
  - At end of 2 years if choose to submit Request to Amend must include RD/RA Work Plan
- Public Comment Period after preliminary decision



- Next Steps and Public Participation
- Questions/Comments



Montana DEQ's mission is **to champion a healthy environment for a thriving Montana.**





# References

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*DEQ Colstrip Coal Ash Pond Cleanup Website:*  
<https://deg.mt.gov/cleanupandrec/Programs/colstrip>

*MCA Title 75 Chpt 8 – Coal Fired Generating Unit Remediation Act:*  
[https://leg.mt.gov/bills/mca/title\\_0750/chapter\\_0080/part\\_0010/sections\\_index.html](https://leg.mt.gov/bills/mca/title_0750/chapter_0080/part_0010/sections_index.html)

*Talen CCR Rule Website:*  
<https://www.talenenergy.com/ccr-colstrip/>