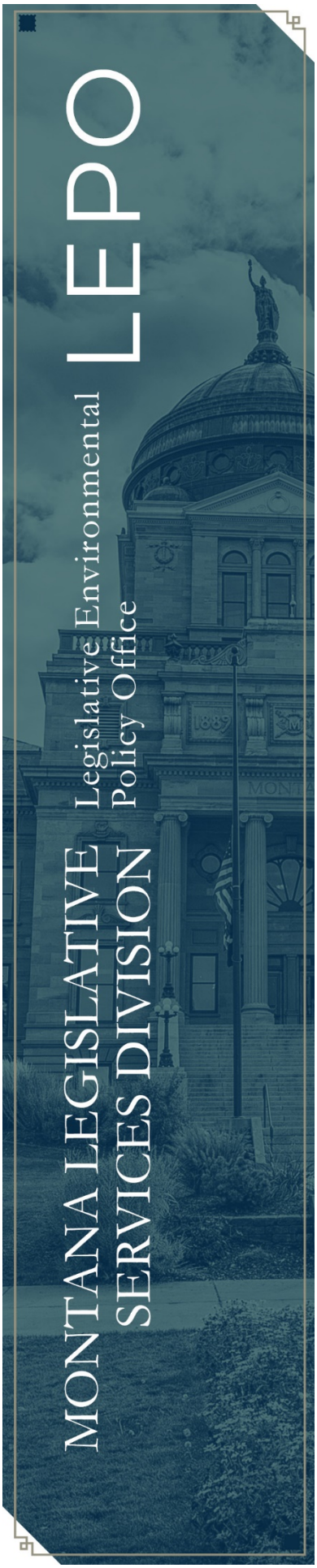

December 2019

HJ 38: COAL-FIRED POWER

INTRODUCTION

Cleaning up after a coal plant closes requires millions of dollars and thousands of hours to not only plan for remediation but also to clean up contaminants and support the potential new use of a property. Montana is working through the dollars and cents as well as these complex processes in Colstrip.

As outlined in House Joint Resolution 38, the Environmental Quality Council is tasked with examining state laws related to the bonding, decommissioning, and reclamation of energy facilities in Montana. With the closure of Units 1 and 2 at the Colstrip Generating Station in early 2020, the owners of the generating units along with Montana's Department of Environmental Quality (DEQ) are navigating the regulations that guide the plant's closure and the decommissioning, reclamation, and potential redevelopment of the plant site. This report focuses on those regulations, specifically regarding Colstrip. Future reports will include a review of bonding, decommissioning, and remediation requirements in law for other forms of Montana energy generation.

When Colstrip Units 1 and 2 cease operations about 600 megawatts will be removed from the grid. When a coal-fired power plant retires, the electric-generating equipment (boilers, generators, etc.) stop operating, and the electricity stops going on the line. Permits for those plants are terminated, eliminating the legal operation of the units. Buildings and structures are typically removed from the site, and decommissioning takes place. Remediation also occurs, which involves cleaning up hazardous materials. Because Units 1 and 2 operate in the same footprint as Units 3 and 4, decommissioning may be delayed until the other units retire. However, remediation of some areas is already under way to accommodate the closure.

At a coal-fired power plant, remediation generally focuses on addressing coal combustion residuals, referred to as coal ash. Colstrip burns coal in the boiler where steam is generated from water contained in boiler tubes. The steam rotates turbines that generate electricity. Exhaust and flue gases generated from burning coal are directed to scrubbers. Flue gas scrubbers, the plant's main pollution control equipment, captures SO_2, particulates, and other potential pollutants generated. Burning the coal leaves two residuals: bottom ash and fly ash. Fly ash, which is less dense than bottom ash, is exhausted with flue gases through the scrubbers. Scrubbers remove the particulates creating scrubber slurry. The bottom and fly ash is placed in ponds that surround the facility, as is the case in Colstrip where nine coal ash ponds are used. The contaminants of concern in the ponds are boron, sulfate, molybdenum, manganese, lithium, selenium, and cobalt.

A coal-fired power plant in Montana operates in accordance with the Montana Water Quality Act, the Montana Air Quality Act, and federal Coal Combustion Residuals (CCR) rules under the federal Resource Conservation and Recovery Act. These legal requirements also guide remediation. The 2017 Legislature passed and approved a Coal-Fired Generating Unit Remediation Act. The act provides guidance for the decommissioning process at Colstrip and reinforce remediation requirements DEQ has in place.

Prior to 2001, power generation facilities in Montana, specifically Colstrip, were also subject to the Major Facility Siting Act. The main provisions of the act were certification by the state prior to construction, fact finding, applicant-paid funding, and public involvement. To issue the certificate, the state determined that the project was environmentally compatible and that a public need for the facility existed. In 1991 Montana exempted coal ash from the Solid Waste Management Act. In 2001 Montana exempted most power plants from the Major Facility Siting Act, which included removal of other coal ash requirements. However, because Colstrip Units 3 and 4 were authorized through the certificate process, the DEQ finds that Units 1 and 2 are also grandfathered in under aspects of the certification. Portions of remediation and the DEQ's authority at Colstrip then also fall under the Major Facility Siting Act.

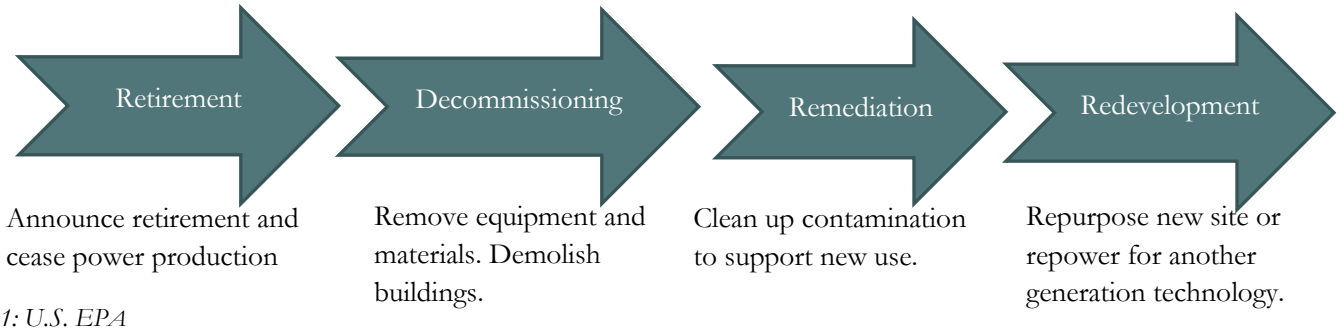

Figure 1: U.S. EPA

RETIREMENT

In June 2019 Talen and Puget Sound Energy, the owners of Units 1 and 2, announced that those two units would retire by the close of the year. In November, the Units 1 and 2 owners announced the closure would be pushed past the new year to maintain about 100 employee positions through the holidays. Closure is expected by the end of January 2020. Closure is also legally required no later than July 2022, based on the terms of a legal settlement between the Colstrip owners and the Sierra Club and the Montana Environmental Information Center.

Units 1 and 2 began operating in 1975 and 1976. Each have a nameplate capacity of 307 megawatts (MW). Economic reasons are cited as the reason for the closure. However, there are many pieces to the economic puzzle. When Talen announced the closure, the company stated, "Fuel constitutes the bulk of our operating cost, and our repeated efforts to negotiate lower fuel prices with Westmoreland Rosebud Mining, the plant's sole and only historically permitted fuel supplier, have been rebuffed. Rather than working with us to keep Units 1 and 2 open, Westmoreland is proposing to increase the units' fuel cost going forward." Wind and solar energy as well as natural gas are increasingly competitive in the electricity market. Customers on the west coast also are interested in using more renewable energy and reducing their reliance on coal power.

Talen is a merchant generator, which means it is not regulated by a utility commission. Talen has contracts with large customers in Montana and directly sells to those large customers. Large customers, like refineries and hospitals, have a monthly demand of greater than 5,000 kilowatts in Montana. The contracts are confidential. When Montana re-regulated electricity supply in 2007, it did not include large customers. Large customers shop for electricity supply on the market. In

Montana, NorthWestern Energy owns the transmission lines. Large customers pay to use those lines but can buy their supply from the entity of their choosing.

Puget Sound Energy serves customers in Washington state. The Washington Legislature in 2019 passed legislation that requires electric utilities to eliminate coal-fired resources from their allocation of electricity by 2025--this includes two Colstrip owners, Puget Sound Energy and Avista.

Six companies share in the ownership of the two larger Colstrip Units 3 and 4. Those units were built in 1984 and 1986. Each have a capacity of 740 MW. Retirement must be agreed to by all six owners. The owners are discussing and establishing depreciation schedules for their interests in Colstrip. Depreciation schedules establish a timeline for when a utility is financially able to retire a facility, but the schedules don't necessarily establish a retirement date.

Colstrip Units 3 & 4 Ownership and Depreciation

Owner	Ownership of 3	Ownership of 4	Megawatts	Depreciation Schedule
Talen	30% of Unit 3	0% of Unit 4	222 MW	Unknown
Puget Sound Energy	25% of Unit 3	25% of Unit 4	370 MW	2027* **SB 5116 passed by the Washington Legislature requires an accelerated depreciation schedule for interests in coal to no later than 2025.*
NorthWestern Energy	0% of Unit 3	30% of Unit 4	222 MW	2042
Portland General Electric	20% of Unit 3	20% of Unit 4	296 MW	2030-2035
Avista	15% of Unit 3	15% of Unit 4	222 MW	2025
PacifiCorp	10% of Unit 3	10% of Unit 4	148 MW	2027 (expected to move to 2025 to meet with SB 5116)

Source: DEQ

DECOMMISSIONING

Montana's Coal-Fired Generating Unit Remediation Act is imposed on coal-fired generation facilities that are 200 MW or larger. It includes Colstrip. Remediation at the Colstrip ponds is already occurring in some areas, under another process outlined later in this report. As Colstrip owners decommission or dismantle and address the cleanup of the plant site itself, the DEQ will use its authority under the act to ensure cleanup of, for example, asbestos that could be in buildings and underground petroleum storage tanks.

Decommissioning costs for a typical 500-megawatt coal-fired power plant range from $5 million to $15 million net of scrap, according to an industry publication.[1] The schedule is typically 18 to 30 months. Decommissioning costs are affected by:

- The quantity of asbestos and regulated materials
- The presence or absence of buildings
- Labor markets
- Demolition means and methods
- Proximity to scrap markets[2]

Montana's law requires the owner of a coal-fired plant to submit a remediation plan to the DEQ no later than three months after the facility closes. Talen and Puget Sound Energy are expected to submit their plan for Units 1 and 2 by April 2020. The plan will outline how the owners will meet their applicable legal obligations to clean up. Applicable legal obligations are defined as "state or federal environmental laws, including but not limited to the Montana Water Quality Act, rules regarding disposal of coal combustion residuals from electric utilities, the Montana Major Facility Siting Act, and other applicable laws administered by the DEQ". The term includes any consent order or settlement imposing obligations to undertake remediation actions at the coal-fired generating unit or affected property.

A 2017 study found the mean cost of retiring a coal-fired power plant per megawatt at $117,000--with a range of $21,000 to $466,000 per megawatt.[1]

The plan must include the current and reasonably anticipated future uses of the property and remediation information. Remediation information includes:

- a list of reports, studies, or other evaluations related to remediation and specific remediation measures already completed or under way pursuant to any applicable legal obligation; and
- how the remediation measures will clean up the property consistent with, but not more stringent than, applicable legal obligations.

The 2019 Legislature revisited the act and added new labor requirements. Under the law, when contracting for construction, alteration, demolition, installation, repair, or maintenance work to implement a remediation plan, an owner must require its contractors and any subcontractors use a skilled and trained workforce to perform all remediation. Contracts signed must require contractors and subcontractors to pay the standard prevailing rate of wages and pay apprentice wage rates.

The filing of a plan is not a commitment to retire a coal-fired generating unit on any set date. While the DEQ has the authority to approve and enforce a plan, the plan also does not include any sort of financial assurance from the operator or owner. However, to the extent costs are not recovered or recoverable under other "applicable legal obligations", the DEQ may recover its actual costs for its review of a plan and for its monitoring, inspection, and enforcement activities related to the approved plan.

[1] Power, "Coal Power Plant Post-Retirement Options," Ed Malley, September 2016.
[2] Ibid.

A 2017 study found the mean cost of retiring a coal-fired power plant per megawatt at $117,000--with a range of $21,000 to $466,000 per megawatt.[3] "Full decommissioning often involves extensive environmental remediation, the costs of which are uncertain until work has begun," according to the study.[4]

Puget Sound Energy projects that the cost of decommissioning Colstrip Units 1 & 2 is about $49.7 million. Puget also has identified two known legal requirements for groundwater remediation at Colstrip Units 1 & 2, projecting remediation costs of $85 million to $142.7 million. Overall, Puget projects a range of decommissioning and remediation costs from $67.4 to $97.4 million.[5] Puget, as the owner of 50% of the two plants, is responsible for half those costs.

The DEQ estimates the total cost of the remedies, the ash ponds, and seepage at Colstrip (Units 1-4) could be between $400 to $700 million. However, overall cleanup costs at Colstrip have not been determined.

At Colstrip, who pays for decommissioning and remediation also continues to be determined. For the regulated utilities, five of the six owners can pass costs through to ratepayers, subject to a public or utility service commissions' approval. Some costs already may be being passed on to customers through rates paid over the life the plant. For the unregulated owner, Talen, shareholders would pay for decommissioning, subject to management approval.

Legislation passed by the 2015 Washington Legislature authorized Puget Sound Energy to create a fund to pay for the closure of Colstrip Units 1 and 2. In general, Puget can fund remediation and decommissioning using a regulatory liabilities account. Puget has a "liabilities account" from federal Treasury grants from hydro upgrade projects and from the federal renewable energy production tax credits (PTCs) earned from Puget wind projects. Puget, rather than credit these benefits back to Washington customers, would use the credits to pay for remediation costs related to Colstrip. The total credit value of the PTCs to customers is approximately $300 million.

REMEDIATION

Remediation at Colstrip will incorporate aspects determined through the decommissioning process outlined above. However, an Administrative Order on Consent (AOC) focused on the coal ash ponds largely guides remediation at Colstrip. The AOC does not cover the plant itself; it covers the ash ponds and related contamination from seepage. In the early 90s, monitoring wells indicated the ash ponds around Colstrip were leaking into the groundwater. In 2012, the DEQ and the plant operator Talen Energy (formerly PPL Montana) signed an AOC to address the seepage. The AOC is an enforcement action taken by the DEQ exercising the authority it is granted under the Montana Water Quality Act and the Major Facility Siting Act. Talen is responsible for the remediation of the coal ash ponds, and the AOC is binding upon Talen's successors.

The AOC addresses the groundwater seepage from wastewater facilities. Talen submits plans to ensure the operation and maintenance of remediation and closure actions at Colstrip. The DEQ reviews and approves those plans. Talen also provides financial assurance in an amount set by the DEQ to cover the costs of remediation and closure. Under the AOC, Talen can provide insurance, third-party guarantee, performance or other surety bond, or letters of credit. DEQ reviews the financial assurance annually, and the DEQ can increase or decrease the amount required based on projected costs for the operation and

[3] Resources for the Future, "Decommissioning US Power Plants", Daniel Raimi, October 2017.
[4] Ibid.
[5] Washington Utilities and Transportation Commission, "Investigation Report: Investigation of coal-fired generating unit decommissioning and remediation costs," UE-151500.

maintenance of remedial and closure actions. Surety bonds are insurance tools aimed at limiting risk. They ensure that companies and people fulfill responsibilities according to laws, regulations, and contractual expectations. The principal is the utility or plant owner--which purchases the bond to guarantee it will meet its obligations. The obligee--the DEQ--requires the bond to limit risk and protect the people of Montana. The surety is the insurance company that backs the principal and underwrites the bonds. If a principal fails to meet the obligations under the bonds, the state can make a claim, and the claim is valid. The surety provides compensation up to the bond amount.

When reviewing the financial assurances now held by DEQ, a discount rate is considered in calculating the present value of expected future costs. A discount rate accounts for the time value of money--the general idea that a dollar today is worth less than a dollar tomorrow because of inflation. However, the assumption is that if a bond is forfeited, the money is invested and earns interest. The initial amount of the financial assurance then appreciates over time at a projected growth rate minus inflation. The federal Environmental Protection Agency, for example, generally uses a 7% real discount rate when comparing alternatives for bonding requirements at federal Superfund sites. The discount rate used by DEQ is 3% based upon a conservative 5% interest rate minus 2% inflation. Under the AOC, financial assurance can only be submitted once the DEQ selects a remedy to ensure an accurate cost estimate. Colstrip's six owners have provided their portion of the financial assurance to date as surety bonds under agreements they have with Talen, as the operator.

Company	Financial Assurance Provided 12/15/19
Talen	**$51.3 million* ($8.2 more in 2020)**
Puget Sound Energy	**$51.6 million* ($8.2 more in 2020)**
NorthWestern Energy	**$13 million**
Portland General Electric	**$17.4 million**
Avista	**$13 million**
PacifiCorp	**$8.7 million**
Total	**$171.4 million**
*Based on a reevaluated plant site remedy, water treatment plant cleanup will cost $16.4 million more than anticipated. Talen and PSE will submit the additional bond in early 2020.	

Source DEQ

THREE AREAS, SIX STEPS

Remediation under the AOC is split into three areas at Colstrip: the plant site, Units 1 and 2 coal ash ponds, and Units 3 and 4 coal ash ponds. For each of the three areas, there are six steps, broken into two parts. The first three steps of cleanup include: site characterization, cleanup criteria and risk assessment, and remedy evaluation. After DEQ selects a remedy, the next three steps follow: remedial action work plan, implementation of selected remedy, and final remediation action report. Each step under each area is subject to DEQ review and approval. The AOC also requires public participation -- public comment periods are required as well as annual public meetings. DEQ also holds quarterly project updates for stakeholders.

Remediation is a lengthy a process and includes multiple steps. Closure plans also may sound like the final regulatory step; however, closure plans for the ash ponds, including long-term maintenance and monitoring plans, were required by August

2017 under the settlement. The DEQ has conditionally approved the closure plans for all three areas. With the closure plan approval, the bond was submitted to the DEQ.

As the Colstrip owners discuss potential changes in ownership, questions about liability continue to be raised. According to DEQ, since the liability exists today, regardless of whether DEQ has chosen a remedy or determined the costs, a current owner retains its liability. DEQ is responsible for acquiring the appropriate amount of financial assurance from the operator (Talen). DEQ is not responsible for dividing up the liability between the owners. The Colstrip owners determine individual liability and plan for providing the financial assurance. In the event of a potential transfer or sale, an owner potentially could request DEQ give its bond back, but the DEQ likely would only return any financial assurance, if a replacement bond was secured. Montana's Public Service Commission also isn't expected to issue an order on a request for preapproval of an acquisition (as discussed in the recent announcement of a potential sale by Puget to NorthWestern Energy) before the close of 2020. DEQ anticipates having all financial assurances in place for chosen remedies before that time.

AREA 1: PLANT SITE COMPLEX

FINANCIAL ASSURANCE: $90 MILLION FOR REMEDIATION AND CLOSURE.

- STEP 1 (SITE CHARACTERIZATION): Talen prepares a site characterization report. The report describes the existing conditions, including the extent of contamination. Talen outlines efforts undertaken so far to clean up and how effective the efforts are.
    - Status: Approved by DEQ
    - Summary: The plant site pond system includes ponds that serve all four generating units in various capacities. Bottom ash from each of the four units is held in plant site ponds. A detailed description of each of the ponds is included in the report. An estimated 60 gallons per minute are leaking from the ponds at the plant site.
- STEP 2 (CLEANUP CRITERIA): Talen prepares cleanup criteria and risk assessment reports. The reports identify the cleanup criteria, which can be standards, risk-based concentrations, or background concentrations, that must be achieved in remediation.
    - Status: Approved by DEQ
- STEP 3 (EVALUATION REPORTS): Talen prepares remedy evaluation reports. Those reports evaluate different options for remediation of the contamination.
    - Status: Approved by DEQ

  Remedy is selected by DEQ – In October 2018 the DEQ selected a remedy to remediate the plant site pond complex at Colstrip. The cost estimated in 2018 was $62.2. However, DEQ required that the discount rate be 3%, rather than the 5% proposed by Talen. The bond held by DEQ is at $73.6 million, and as of early 2020 will be $90 million.
- STEP 4 (REMEDIAL DESIGN): Talen submits a work plan that outlines remedial design and remedial action engineering reports for the remedy selected by the DEQ.
    - Status: Report under review by DEQ
- STEP 5 (IMPLEMENTATION): Talen implements the selected remedy.
- STEP 6 (FINAL REPORT): Talen submits a final remediation action report. The report describes how the remedy was completed. The progress of the cleanup is also continuously evaluated throughout the previous steps.

AREA 2: COAL ASH DISPOSAL PONDS FOR UNITS 1 AND 2

FINANCIAL ASSURANCE: $27 MILLION FOR CLOSURE. REMEDY NOT YET SELECTED.

- STEP 1 (SITE CHARACTERIZATION): Talen prepares a site characterization report. The report describes the existing conditions, including the extent of contamination. Talen outlines efforts undertaken so far to clean up and how effective the efforts are.
  - Status: Approved by DEQ
  - Summary: Ponds that service Colstrip Units 1 and 2 are located about 1.5 miles west of Colstrip. One pond began receiving fly ash, transported as scrubber slurry from Units 1 and 2, for final disposal in 1975. It was full in 1997, and the reclamation program for this pond was completed in 2002. Operators then routed slurry from Units 1 and 2 to a different pond that includes five cells, each with a specific function. At Units 1 and 2 the Stage 1 pond is estimated to leak at 8.47 gallons per minute. The Stage 2 pond is estimated to leak at 21.5 gallons per minute. Steps are being taken to capture the groundwater. The full report assesses the full impacts.
- STEP 2 (CLEANUP CRITERIA): Talen prepares cleanup criteria and risk assessment reports. The reports identify the cleanup criteria, which can be standards, risk-based concentrations, or background concentrations, that must be achieved in remediation.
  - Status: Approved by DEQ
- STEP 3 (EVALUATION REPORTS): Talen prepares remedy evaluation reports. Those reports evaluate different options for remediation of the contamination.
  - Status: DEQ solicited public comment on the report through December 14, 2019.
  - Summary: In January 2019 the DEQ did not approve the revised report submitted by Talen. Talen and the DEQ agreed to split the remedy for Units 1 and 2 into two parts. The first portion addresses the existing groundwater contamination and what is referred to as Stage II ponds. The DEQ posted part one for public comment in November 2019. The second portion of the remedy is not expected until March 2020.
- STEP 4 (REMEDIAL DESIGN): Talen submits a work plan that outlines remedial design and remedial action engineering reports for the remedy selected by the DEQ.
- STEP 5 (IMPLEMENTATION): Talen implements the selected remedy.
- STEP 6 (FINAL REPORT): Talen submits a final remediation action report. The report describes how the remedy was completed. The progress of the cleanup is also continuously evaluated throughout the previous steps.

AREA 3: COAL ASH DISPOSAL PONDS FOR UNITS 3 AND 4

FINANCIAL ASSURANCE: $46 MILLION FOR CLOSURE. REMEDY NOT YET SELECTED.

- STEP 1 (SITE CHARACTERIZATION): Talen prepares a site characterization report. The report describes the existing conditions, including the extent of contamination. Talen outlines efforts undertaken so far to clean up and how effective the efforts are.
  - Status: Approved by DEQ
  - Summary: Ash from Units 3 and 4 are routed to a pond located about 3 miles east of Colstrip. The lined ponds at Units 3 and 4 are estimated to leak at 1.4 gallons per minute. An estimated 277 gallons per minute are estimated to leak below or through the slurry cutoff wall surrounding the lined and unlined ponds for Units 3 and 4. This number also includes rain and snowmelt that falls within the perimeter of the slurry cutoff wall. The full report is here.
- STEP 2 (CLEANUP CRITERIA): Talen prepares cleanup criteria and risk assessment reports. The reports identify the cleanup criteria, which can be standards, risk-based concentrations, or background concentrations, that must be achieved in remediation.
  - Status: DEQ conditionally approved.

  - Summary: Additional radium data will be collected to determine if it must be addressed during remediation, but this will not materially affect the chosen remedy.
- STEP 3 (EVALUATION REPORTS): Talen prepares remedy evaluation reports. Those reports evaluate different options for remediation of the contamination.
  - Status: DEQ is considering public comments received.
  - Summary: Talen is proposing an injection/capture well system, pond closures, monitored natural attenuation, and contingent permeable reactive barriers.
- STEP 4 (REMEDIAL DESIGN): Talen submits a work plan that outlines remedial design and remedial action engineering reports for the remedy selected by the DEQ.
- STEP 5 (IMPLEMENTATION): Talen implements the selected remedy.
- STEP 6 (FINAL REPORT): Talen submits a final remediation action report. The report describes how the remedy was completed. The progress of the cleanup is also continuously evaluated throughout the previous steps.

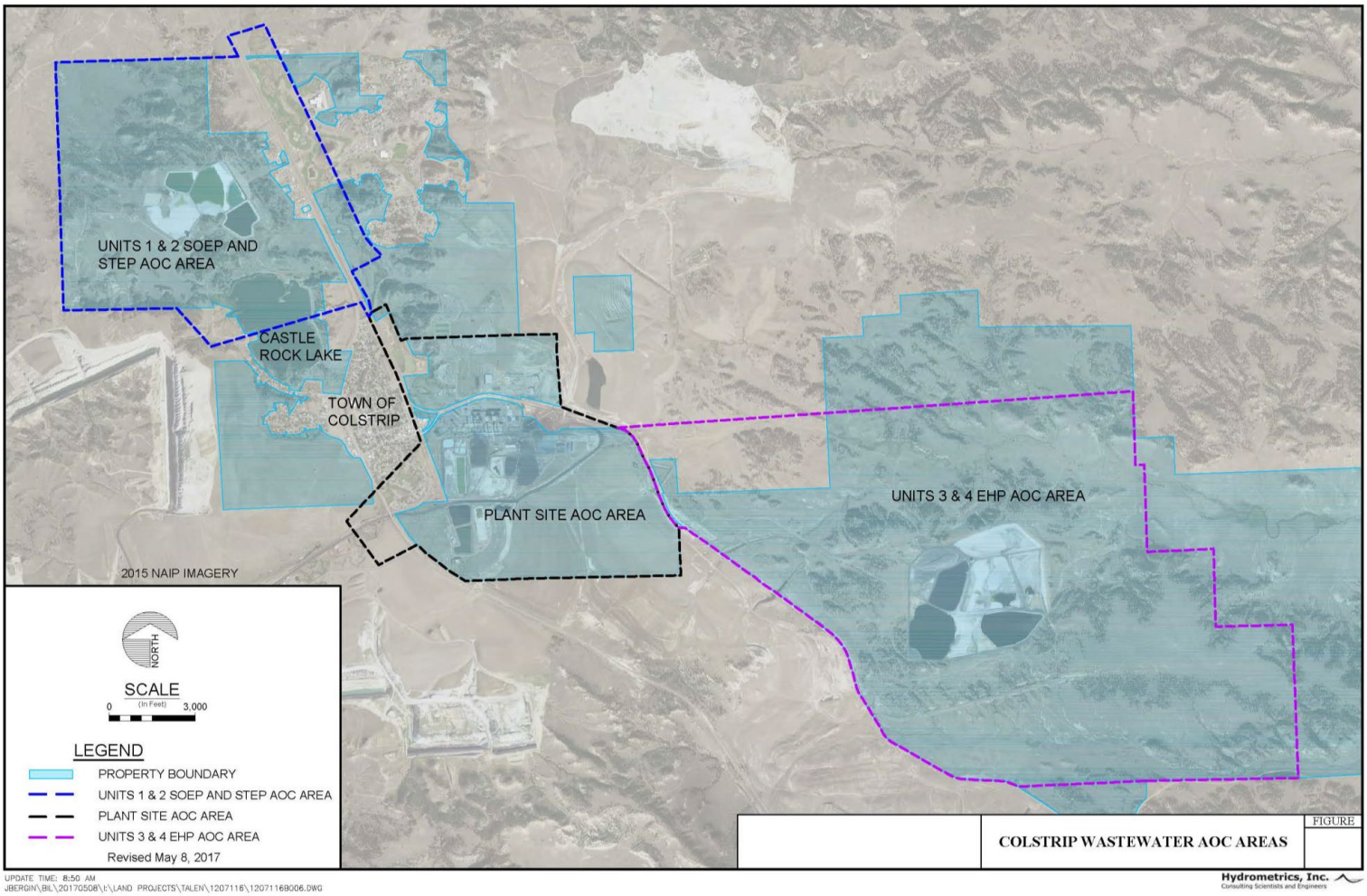

Figure 2: DEQ

REDEVELOPMENT

The Colstrip generating station is located on private property jointly owned by the six plant owners. There are numerous federal, state, and local programs that may be explored by the owners as they discuss potential redevelopment of the plant site. But because the property is privately owned, issues of redevelopment will largely be decisions guided by the owners. The issue of redevelopment, however, in some other communities has been shifted to communities where retired facilities are located. "Because power plant owners' area of expertise is producing electricity rather than developing property, they may have little appetite for conducting a detailed analysis on the potential for redevelopment at a given site."[6]

Redevelopment also may be driven in part by the remediation process and outcome in Colstrip. Remediation remedies and implementation can result in designations ranging from Superfunds to Brownfields.

The federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) allows the federal Environmental Protection Agency to clean up contaminated sites. It also forces the parties responsible for the contamination to either perform cleanups or reimburse the government for cleanup work. Montana also has a state superfund program under the Comprehensive Environmental Cleanup Responsibility Act (CECRA) to require investigation and cleanup of hazardous substances at sites not addressed by federal Superfund. DEQ administers CECRA using the Environmental Quality Protection Fund, which is a cost recovery fund. At this time, the Colstrip generating station site, including the areas included in the AOC, are not considered federal or state superfund sites.

The EPA defines Brownfields as real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Montana's DEQ receives Brownfields funding to assess blighted properties and to serve as a resource for local communities, nonprofits, and economic development authorities looking at redevelopment of those sites.

Power, a utility publication, outlines seven postretirement coal plant options for coal-fired power plant owners to explore when tackling the subject of redevelopment. The industry publication also makes a nod to the long road ahead on the subject. "Only about 20% of the power plants recently slated for closure have been decommissioned to date. That means there is a lot of work ahead to reposition these sites for beneficial use as industrial or commercial facilities."[7]The seven options offered by the industry publication include:

- Retirement and Decommissioning
- As-Is Sale for Decommissioning and Retirement
- Retrofit: Conversion to Natural Gas
- Replacement with New Generation
- Sale for Redevelopment
- Owner-Controlled Decommissioning
- No Action

The U.S. Energy Information Administration also addresses the issue of redevelopment at coal-fired power plant sites. "The redevelopment of a decommissioned coal-fired plant may involve repurposing the site for another generation technology or

[6] Resources for the Future, "Decommissioning US Power Plants", Daniel Raimi, October 2017.
[7] https://www.powermag.com/coal-power-plant-post-retirement-options/?pagenum=6

some other commercial, industrial, or municipal application. Coal-fired power plants typically occupy land in or near downtown areas or along rivers, and they usually have access to railways, roadways, water, sewers, and other infrastructure."[8] Utilities in other states have explored repowering coal-fired power plants with natural-gas fired elements because plants are located near transmission lines, substations, and water. The issue has been raised at Colstrip but not fully investigated.

There are also a growing number of firms and organizations focusing on coal-fired power plant redevelopment opportunities. Environmental liability transfer firms, for example, focus on acquisition, decommissioning, and redevelopment of industrial sites with environmental liabilities, including coal-fired power plants. In both Illinois and Pennsylvania redevelopment options at coal-fired power plants are at the forefront of discussions.

The Pennsylvania economic development department used a grant from the federal POWER initiative to develop a series of plans to help speed the decommissioning and redevelopment of coal-fired power plants. In the state, where 14 coal-fired power plants have closed since 2005, state officials focused on developing a "playbook". It explores opportunities to redevelop areas to accommodate natural gas-fired plants, solar farms, and data centers at various locations. The plans examine the "legacy infrastructure" at each site and then review challenges and opportunities.

In Illinois, local officials in Chicago teamed up with the Delta Institute, a Chicago-based nonprofit organization that collaborates with communities to address environmental challenges in the Midwest. The Delta Institute published a coal plant redevelopment roadmap. The guide establishes an outline for transition with the final step ultimately being reuse of the property. "The time between plant decommissioning and site redevelopment can be lengthy and depends on existing contamination, stakeholder collaboration, site ownership, and available resources. The planning process may involve the utility, local government, and citizens, as well as labor, philanthropic, environmental, and civic organizations.[9]

In August 2017, Montana was awarded $2 million in funding through the federal POWER initiative for planning efforts and for workforce training in Colstrip. The money is intended to support curriculum development or innovative workforce training consistent with the Colstrip economic development plan. In 2018 Montana was awarded another $1 million in federal POWER grant awards. The focus of funding in Montana has to date largely been workforce development, as opposed to site redevelopment.

In 2017, the Governor's and Attorney General's Offices established a Colstrip Community Impact Advisory Group. The group includes state and local officials, community leaders, and labor and economic development organizations. The group has helped the community of Colstrip develop a community impact plan that guides disbursement of economic impact funds provided by owners of the Colstrip Generating Facility.

A plan approved by the Rosebud County Commission and City of Colstrip in 2018 provides for the establishment of a seven-member Colstrip Impacts Foundation (CIF) board composed of government, economic development, union, and local community representatives. A $10 million community impact fund, which was provided by Puget Sound Energy, is to be divided into two funds--a short-term $7.5 million nonpermanent loan fund and a $2.5 million permanent endowment. The CIF will use a request for proposal process to find one or more organizations to establish and manage the two funds. In November 2019, Avista pledged $3 million toward Colstrip's community transition.

---

[8] https://www.eia.gov/todayinenergy/detail.php?id=40212
[9] https://delta-institute.org/delta/wp-content/uploads/in-transition-stories-from-coal-plant-communities-delta-institute-oct-2017.pdf