

DEPARTMENT OF ENVIRONMENTAL QUALITY
Environmental Assessment

Water Protection Bureau

Name of Project: Colstrip Energy Limited Partnership Ash Monofills

Type of Project: Placement of coal ash at an existing monofill.

Location of Project: NWN Section 32, Township 03 North, Range 41 East
Latitude: 45.97529, Longitude: -106.65551

City/Town: Colstrip

County: Rosebud

Description of Project: This Environmental Assessment (EA) is associated with the renewal of an existing Montana Ground Water Pollution Control System (MGWPCS) permit (MTX000052) for the Colstrip Energy Limited Partnership Ash Monofills (facility). The MGWPCS permit reauthorizes Colstrip Energy Limited Partnership's (permittee) placement of dry coal fly ash and bottom ash at an existing monofill.

Fly ash and bottom ash is a byproduct of the combustion process at the permittee's coal-fired steam electric power generation facility. The ash is deposited in dry form by truck on top of the existing monofill site that is located adjacent to the power plant. The ash is then hydrated (minimally) to mitigate fugitive dust emissions and to solidify the ash. Both the power plant and ash monofills are located approximately four miles north of the Town of Colstrip.

The facility has two ash monofills. One is actively being used for placement of dry coal ash. The other monofill was rehabilitated in 2006. Active monitoring for potential leachate is currently taking place at both monofills.

The MGWPCS permit requires:

- Long term ground water monitoring for potential monofill leachate;
- Best management practices for fugitive dust and erosion control;
- Rehabilitation of the monofill; and,
- Long term monitoring of rehabilitation efforts.

The scope of this EA addresses the operation, placement of waste, best management practices, and monitoring conditions of the facility. The magnitude and significance of potential impacts are summarized below (bullet #26).

The permittee also maintains the following permits and authorizations for this facility:

- Montana Pollution Discharge Elimination System (MPDES) General Permit for Storm Water Discharges Associated with Industrial Activity, MTR000058;
- MPDES Individual Permit for the coal pile retention pond, MT0031780; and,
- Montana Air Quality Permit, 2035-06.

Agency Action and Applicable Regulations: The proposed action is to reissue the individual MGWPCS permit that contains limitations, monitoring, reporting, rehabilitation requirements, and best management practices to control dust and erosion. The permit is issued under the authority of the Montana Water Quality Act, and the Montana Ground Water Pollution Control System rules.

Summary of Issues: The purpose of this action is to:

- Continue monitoring facility activities and site conditions for any potential impact to state waters;
- Maintain best management practices to control dust and erosion;
- Maintain rehabilitation plans for the active ash monofill; and,
- Continue monitoring of rehabilitated areas.

Affected Environment & Impacts of the Proposed Project:

Y = Impacts may occur (explain under Potential Impacts).

N = Not Present or No Impact will likely occur.

IMPACTS ON THE PHYSICAL ENVIRONMENT	
RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES
<p>1. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE: Are soils present which are fragile, erosive, susceptible to compaction, or unstable? Are there unusual or unstable geologic features? Are there special reclamation considerations?</p>	<p>[Y] The facility was built upon the Lebo Member of the Fort Union Formation that contains carbonaceous shale, bentonitic claystone, sandstone, and coal. The Lebo Member may be up to 600 ft thick and serves as the basement for the ash monofills. Surficial alluvial and/or colluvial deposits may also be present. The nearest continuous alluvial deposit can be found along the East Fork of Armells Creek.</p> <p>The natural topography and the constructed embankment of the ash monofill have steep grades which may increase the chances of erosion. The MGWPCS permit requires the permittee to use best management practices for the active control of on-site erosion and sedimentation.</p> <p>The ash is disposed of in dry form, with minimal hydration to mitigate dust and to solidify the ash.</p>

IMPACTS ON THE PHYSICAL ENVIRONMENT	
	<p>The permit also requires the permittee to place a top soil cap on the ash monofill and to establish a native vegetation community. Post-rehabilitation monitoring for ground water, surface water, erosion control, and vegetation cover shall be continued as mitigation measures until approved and terminated by DEQ.</p>
<p>2. WATER QUALITY, QUANTITY AND DISTRIBUTION: Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality?</p>	<p>[N] The shallow water bearing zones found throughout the area tend to be lenticular and discontinuous in nature. The numerous beds of shale and claystone may result in the perching of shallow zones and the confinement of deeper ones. This geologic material indicates the likelihood of low intrinsic permeability and hydraulic conductivity (Fetter, 1994). These water bearing zones may need additional aquifer characterization as they may daylight/crop-out at the ephemeral drainages.</p> <p>The main source of drinking and industrial water wells in this area is within confined sandstone water bearing zones found at depths of around 500 ft and 1,000 ft.</p> <p>The MGWPCS permit requires the continued monitoring of the existing ground water monitoring well network. The network is made up of ten monitoring wells constructed to be representative of shallow ground water found within the top portion of the Lebo Member of the Fort Union Formation and any overlying alluvium.</p> <p>The ash monofills were constructed within two separate coulees within an unnamed ephemeral drainage. During storm events, watershed runoff upgradient of each monofill is directed around and through the ash deposits in use of diversion structures and culverts. All storm water from the monofill areas eventually flows northeast toward the East Fork of Armells Creek which is approximately 3,500 feet away from the monofills.</p>
<p>3. AIR QUALITY: Will pollutants or particulate be produced? Is the project influenced by air quality regulations or zones (Class I airshed)?</p>	<p>[Y] Fugitive dust may be of concern. The MGWPCS permit therefore requires the permittee to use best management practices for the active control of dust emissions. The permittee currently hydrates each load of ash using wastewater generated from the power plant.</p>

IMPACTS ON THE PHYSICAL ENVIRONMENT	
	The MGWPCS permit requires rehabilitation of the monofill site upon closure which will include a native vegetation cap. DEQ will require post-rehabilitation monitoring.
4. VEGETATION COVER, QUANTITY AND QUALITY: Will vegetative communities be significantly impacted? Are any rare plants or cover types present?	<p>[Y] The inactive monofill was rehabilitated in 2006. Post-rehabilitation monitoring continues today through the MGWPCS and MPDES permits.</p> <p>As the active monofill grows in size so does the disturbance area. Rehabilitation requirements include the placement of top soil, the establishment of a native vegetative community, and post-rehabilitation monitoring.</p> <p>Based on a search of the Natural Heritage Database, there are no vegetative species listed as either S1, S2, LE, or LT in the general vicinity of the facility. http://fieldguide.mt.gov/statusCodes.aspx#msrc:rank</p>
5. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS: Is there substantial use of the area by important wildlife, birds or fish?	<p>[N] Based on a search of the Natural Heritage Database, there are no animal species listed as either S1, S2, LE, or LT in the vicinity of the facility http://fieldguide.mt.gov/statusCodes.aspx#msrc:rank.</p> <p>The facility area falls within general habitat for <i>Centrocercus urophasianus</i> (Greater Sage Grouse), which is listed by the state as a S2 species. More information on this species is provided in #7 below.</p>
6. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES: Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Species of special concern?	<p>[N] There are no federally listed, threatened, or endangered species in or around the facility, see #4 and #5 above.</p> <p>Site and habitat inventories for the applicable species were recommended in consultation with the Montana Natural Heritage Program. The applicant is encouraged to contact and consult with this program or other Natural Resource Information Programs available at the Montana State Library: http://nris.msl.mt.gov/</p>
7. SAGE GROUSE EXECUTIVE ORDER: Is the project proposed in core, general or connectivity sage grouse habitat, as designated by the Sage Grouse Habitat Conservation Program (Program) at: https://sagegrouse.mt.gov/	<p>[Y] The Montana Sage Grouse Habitat Conservation Program's website shows that the facility area falls within the general habitat area for the Greater Sage Grouse (<i>Centrocercus urophasianus</i>). https://sagegrouse.mt.gov/.</p>

IMPACTS ON THE PHYSICAL ENVIRONMENT	
	<p>The permittee has been referred to the Sage Grouse Habitat Conservation Program for consultation: https://sagegrouse.mt.gov/. The permittee must provide DEQ with notice of any restrictions (or recommendations) placed upon the project.</p> <p>The facility was first established in the early 1990's prior to the current sage grouse conservation program. DEQ requires that all disturbance be rehabilitated with a native vegetation community.</p>
8. HISTORICAL AND ARCHAEOLOGICAL SITES: Are any historical, archaeological or paleontological resources present?	[N] A general recommendation by the Montana State Historic Preservation Office (MSHPO) states that in the event that cultural materials are inadvertently discovered, the permittee should contact the MSHPO office for investigation.
9. AESTHETICS: Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light?	[N] No significant impacts have been identified.
10. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR, OR ENERGY: Will the project use resources that are limited in the area? Are there other activities nearby that will affect the project? Will new or upgraded power line or other energy source be needed?	[N] The on-site activity of hydrating ash utilizes wastewater generated from the operation of the power plant.
11. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES: Are there other activities nearby that will affect the project?	[N]

IMPACTS ON THE HUMAN ENVIRONMENT	
12. HUMAN HEALTH AND SAFETY: Will this project add to health and safety risks in the area?	[N] The facility is located in a rural area. The closest populated town is Colstrip located approximately four miles away. DEQ requires the permittee to actively control any fugitive dust emissions in use of best management practices. The permittee currently hydrates the ash using an on-site water tender truck.
13. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION: Will the project add to or alter these activities?	[Y] The ash monofill is an integral operation of the Rosebud Electrical Generating Power Plant.

IMPACTS ON THE HUMAN ENVIRONMENT	
14. QUANTITY AND DISTRIBUTION OF EMPLOYMENT: Will the project create, move or eliminate jobs? If so, estimated number.	[N] Employees are needed on-site during operation.
15. LOCAL AND STATE TAX BASE AND TAX REVENUES: Will the project create or eliminate tax revenue?	[N] No significant impacts have been identified.
16. DEMAND FOR GOVERNMENT SERVICES: Will substantial traffic be added to existing roads? Will other services (fire protection, police, schools, etc.) be needed?	[N] The project was first created in the early 1990's. Trucks hauling limestone from the Bighorn quarry (located near Warren) and other supplies will continue to use the interstate, highways, and county roads of the region.
17. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS: Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?	[N] No significant impacts have been identified.
18. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES: Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract?	[N] There is no public access through the facility. The operations of the power plant may limit any local access by the public.
19. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING: Will the project add to the population and require additional housing?	[N] No significant impacts have been identified.
20. SOCIAL STRUCTURES AND MORES: Is some disruption of native or traditional lifestyles or communities possible?	[N] No significant impacts have been identified.
21. CULTURAL UNIQUENESS AND DIVERSITY: Will the action cause a shift in some unique quality of the area?	[N] No significant impacts have been identified.
22. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:	[N] No significant impacts have been identified.
23(a). PRIVATE PROPERTY IMPACTS: Are we regulating the use of private property under a regulatory statute adopted pursuant to the police power of the state? (Property management, grants of financial assistance, and the exercise of the power of eminent domain are not within this category.) If not, no further analysis is required.	[N] No significant impacts have been identified.

IMPACTS ON THE HUMAN ENVIRONMENT	
23(b). PRIVATE PROPERTY IMPACTS: Is the agency proposing to deny the application or condition the approval in a way that restricts the use of the regulated person's private property? If not, no further analysis is required.	<input checked="" type="checkbox"/> No significant impacts have been identified.
23(c). PRIVATE PROPERTY IMPACTS: If the answer to 23(b) is affirmative, does the agency have legal discretion to impose or not impose the proposed restriction or discretion as to how the restriction will be imposed? If not, no further analysis is required. If so, the agency must determine if there are alternatives that would reduce, minimize or eliminate the restriction on the use of private property, and analyze such alternatives. The agency must disclose the potential costs of identified restrictions.	<input type="checkbox"/> No significant impacts were identified in 23(b).

24. **Description of and Impacts of other Alternatives Considered:**

- A. No Action: Under the “No Action” alternative, the Department would not reissue the existing ground water discharge permit. “No Action” may lead to the creation of a non-permitted facility. This may result in the loss of:
- Facility, ash, industrial wastewater and ground water monitoring and reporting;
 - Rehabilitation requirements;
 - Fugitive dust control requirements; and,
 - Erosion control requirements.
- B. Approval with Modification: The Department has not identified any necessary modifications to grant approval.

25. **Cumulative Effects:**

Each load of ash is hydrated with wastewater generated by the electrical generating power plant. Hydration triggers the pozzolanic reaction of the ash's calcium hydroxide and siliceous/aluminous materials resulting in cementation. The permit requires ongoing monitoring and reporting of the underlying ground water.

26. **Summary of Magnitude and Significance of Potential Impacts:**
Impacts were assessed with the assumption that the facility will comply with the terms and conditions of the permit. Violations of the permit could lead to significant adverse impacts to state waters. Violations of the permit are not an effect of the agency action since the permit itself forbids such activities. However, the Department has taken steps to ensure that violations do not occur. The Department provides assistance to applicants in understanding and implementing the requirements of the permit. The Department also conducts periodic inspections of permitted facilities, and identifies potential problems with design or management practices. If violations of the permit do occur, the Department will take appropriate action under the water quality act. Enforcement sanctions for violations of the permit include injunctions, civil and administrative penalties, and cleanup orders.
27. **Preferred Action Alternative and Rationale:** The preferred action is to reissue the existing individual MGWPCS discharge permit. This action is preferred since the permit provides a regulatory mechanism for monitoring ground water quality, dust emission controls, erosion controls, and rehabilitation requirements.

Recommendation for Further Environmental Analysis:

EIS More Detailed EA No Further Analysis

Rationale for Recommendation: An EIS is not required under the Montana Environmental Policy Act because the project lacks significant adverse effects to the human and physical environment.

28. **Public Involvement:** Legal notice information for water quality discharge permits are listed at the following website: <http://deq.mt.gov/Public/notices/wqnotices>. Public comments on this proposal are invited any time prior to close of business on January 02, 2020. Comments may be directed to:

DEQWPBPublicComments@mt.gov

or at:

Water Protection Bureau
PO Box 200901
Helena, MT 59620

All comments received or postmarked prior to the close of the public comment period will be considered in the formulation of the final permit. DEQ will respond to all substantive comments pertinent to this permitting action and may issue a final decision within thirty days of the close of the public comment period.

All persons, including the applicant, who believe any condition of the draft permit is inappropriate, or that DEQ's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, shall raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period (including any public hearing). All public comments received for this draft permit will be included in the administrative record and will be available for public viewing during normal business hours.

Copies of the public notice were mailed to the applicant, state and federal agencies and interested persons who have expressed interest in being notified of permit actions. A copy of the distribution list is available in the administrative record for this draft permit. Electronic copies of the public notice, draft permit, fact sheet, and draft environmental assessment are available at the following website:
<http://deq.mt.gov/Public/notices/wqnotices>.

Any person interested in being placed on the mailing list for information regarding this permit may contact the DEQ Water Protection Bureau at (406) 444-5546 or email DEQWPBPublicComments@mt.gov. All inquiries will need to reference the permit number (MTX000052), and include the following information: name, address, and phone number.

During the public comment period provided by the notice, DEQ will accept requests for a public hearing. A request for a public hearing must be in writing and must state the nature of the issue proposed to be raised in the hearing.

29. **Persons and/or Agencies Consulted or Referenced in the Preparation of this Analysis:**

40 CFR § 116.4. Designation of Hazardous Substances. 2011.

40 CFR § 136. Guidelines Establishing Test Procedures for the Analysis of Pollutants. 2011.

40 CFR § 257. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities.

40 CFR § 423. Industrial (Effluent) Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category. 2013.

Administrative Rules of Montana, Title 17, Chapter 30, Water Quality:

- Subchapter 2 - Water Quality Permit Fees.
- Subchapter 5 – Mixing Zones in Surface and Ground Water.
- Subchapter 7 – Nondegradation of Water Quality.
- Subchapter 10 – Montana Ground Water Pollution Control System.
- Subchapter 13 – Montana Pollutant Discharge Elimination System.

ATSM. 2006. D3987-06 Standard Test Method for Shake Extraction of Solid Waste with Water. ASTM International. West Conshohocken, PA. DOI: 10.1520/D3987-06.

Beck, M.A., 2007. Leachate Chemistry of Mixtures of Fly Ash and Alkaline Coal Refuse. Virginia Tech, Department of Crop and Soil Environmental Sciences.

Brady, N.C. and R. R. Weil. 2004. Elements of the Nature and Properties of Soils 2nd Edition. Prentice Hall. Upper Saddle River, NJ.

Crowley et al., 2017. Montana Bureau of Mines and Geology (MBMG), Principal Aquifers of Montana, MBMG Hydrogeologic Map 11.

Department of Environmental Quality, Water Quality Circulars:

- Circular DEQ-2 – Design Standards for Wastewater Facilities.
- Circular DEQ-4 – Montana Standards for On-Site Subsurface Sewage Treatment Systems.
- Circular DEQ-7 – Montana Numeric Water Quality Standards, Required Reporting Values, and Trigger Values.

Department of Environmental Quality, Compliance Inspection Report, Colstrip Energy Limited Partnership, MTX000052. November 19, 2014.

Department of Environmental Quality, Site Visit Report, Colstrip Energy Limited Partnership Ash Monofill, MTX000052. October 11, 2017.

Driscoll, F.G. 1986. Groundwater and Wells 2nd Edition. Johnson Division. St. Paul, Minnesota.

Fetter, C.W., Applied Hydrogeology, 1994.

Freeze, R., and Cherry, J., Groundwater, 1979.

Henke, K.R. Trace Element Chemistry of Fly Ashes from Co-combusted Petroleum Coke and Coal. University of Kentucky, Center for Applied Energy Research.

Ibrahim, A. 2015. National Water Research Center. Chemical Characterization and Mobility of Metal Species in Fly Ash-Water System. Water Science Direct Journal: 29 (2015) 109-122.

Kendy, E. and R.E. Tresch. 1996. Geographic, Geologic, and Hydrologic Summaries of Intermontane Basins of the Northern Rocky Mountains, Montana. USGS Water-Resources Investigations Report: 96-4025.

Kutchko, B. 2005. Fly Ash Characterization by SEM-EDS. Science Direct, Fuel 85 (2006) 2537-2544

Lee, J. 1997. Quality Analysis of Petroleum Cokes and Coals. Long Beach, CA, 90813.

Mapel, W.J., Roby, R.N., Sarnecki, J.C., Sokaski, M., Bohor, B.F. and G. McIntyre. 1975. Status of Mineral Resource Information for the Crow Indian Reservation. Administrative report BIA-7.

Montana Code Annotated, Title 75, Chapter 5, *Montana Water Quality Act*, 2011.

Rauen, 2011. Golder Associates Inc. Proposed CCP Disposal Regulations: Groundwater Monitoring and Recordkeeping. 2011 World of Coal Ash Conference.

U.S. Department of Energy, *Gasification Manual, Section 8.7*, National Energy Technology Laboratory.

U.S. Environmental Protection Agency, Effluent Limitation Guidelines, <http://water.epa.gov/scitech/wastetech/guide/>, 2013.

U.S. Environmental Protection Agency, Guidance Manual for Developing Best Management Practices <http://www.epa.gov/npdes/pubs/owm0274.pdf>, 1993.

U.S. Environmental Protection Agency, NPDES Permit Writers' Manual, 833-K-10-001, September 2010.

U.S. Environmental Protection Agency, 2002b. *Onsite Wastewater Treatment Systems Manual*, 625/R-00/008, Office of Research and Development and Office of Water. Washington, DC.

U.S. Environmental Protection Agency, 1991. Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells. EPA160014-891034. Office of Research and Development, Las Vegas, NV.

U.S. Environmental Protection Agency, 2009. *Unified Guidance: Statistical Analysis of Ground Water Data*. EPA-530/R-09-007. Office of Resource Conservation and Recovery, Washington, DC

U.S. Environmental Protection Agency, 1991. *Suggested Operating Procedures for Aquifer Pumping Tests*. EPA-540/S-93/503. Office of Research and Development, Washington, DC.

U.S. Environmental Protection Agency, 1991. *Technical Support Document for Water Quality-Based Toxics Control (TSD)*. EPA-505/2-90-001. Office of Water, Washington, DC.
www.epa.gov/npdes/pubs/owm0264.pdf

U.S. Environmental Protection Agency, 2015. *Technical Development Document for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*. EPA-821-R-12-007. Office of Water, Washington, DC.

U.S. Environmental Protection Agency. 1996. Test Method 6010B, Inductively Coupled Plasma-Atomic Emission Spectrometry.

U.S. Environmental Protection Agency. 2007. Test Method Method 6010C Inductively Coupled Plasma-Atomic Emission Spectrometry.

U.S. Geological Survey, Basic Ground Water Hydrology,
<http://pubs.usgs.gov/wsp/2220/report.pdf>, 2016.

U.S. Geological Survey, Groundwater Basics, <http://water.usgs.gov/ogw/basics.html>, 2016.

Woessner, W., Troy, T., Ball, P. and D.C. DeBorde. 1998. Virus Transport in the Capture Zone of a Well Penetrating a High Hydraulic Conductivity Aquifer.

Van Gosen, B.S., Wilson, A.B., and J.M. Hammarstrom. 1996. Mineral resource assessment of the Custer National Forest in the Pryor Mountains, Carbon County, south-central Montana. U.S. Geological Survey Open-File Report 96-256.

Vuke, et al., Montana Bureau of Mines and Geology, Geologic Map of Montana, Geologic Map 62, 2007.

Vuke, et al. 2001. Montana Bureau of Mines and Geology. Geologic Map of the Lame Deer Quadrangle, Eastern Montana. Open File Report MBMG 428.

EA Checklist Prepared By:

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November 15, 2019

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Signature

Date