MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

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In the Matter of the Application of PPL Montana, LLC
to Amend the Colstrip 3 and 4 Certificate of
Environmental Compatibility and Public Need.

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PPL Montana, LLC, ("PPLM"), successor in interest to the Montana Power Company, operates the Colstrip Steam Electric Station. The Colstrip Steam Electric Station (CSES) consists of four units: Units 1 and 2 are 333 MW each (gross) and Units 3 and 4 that are 805 MW each (gross). The units combust locally mined sub-bituminous Powder River Basin coal. Construction on Units 1 and 2 began in 1972, with Unit 1 starting commercial operation in 1975 and Unit 2 starting commercial operation in 1976. Units 3 and 4 were constructed later; Unit 3 began commercial operation in 1984 and Unit 4 began commercial operation in 1986. Units 3 and 4 were sited and constructed pursuant to a certificate issued under the Major Facility Siting Act (MFSA), Mont. Code Ann. § 75-20, et seq. ("Certificate"). That Certificate governs Units 3 and 4 and their associated facilities. PPL Montana (PPLM) has operated the CSES since December 17, 1999.

On December 19, 2014, PPLM filed an application to amend its Certificate related to the consumption of coal by Units 3 and 4. The proposed amendment seeks to authorize PPLM to use Rosebud seam coal from Areas A, B, F and G in Units 3 and 4. A map depicting Areas A, B, F, and G is attached to this document as Attachment 1.

Specifically, PPLM requests the following amendment to the Certificate:

> *Amendment for Colstrip Units 3 and 4 Consumption of Rosebud Mine Coal:*
>
> At the request of PPLM, the following modifications would be made to the Certificate dated July 22, 1976:
>
> "XV
>
> The fuel to be used in Units #3 and #4 will be Rosebud seam coal from the Colstrip area. (Berube 7-902). It will be mined from areas designated C, D, and E, shown on Exhibits 52, 53, 140 and 141. (Berube 8-1027-1029; Rice 28-3635-3636, 3640-3641). Based upon Certificate amendment in 2014, Units 3&4 are also allowed to utilize Rosebud seam coal mined from areas A, B, F and G, such coal having been shown to be of substantially the same or better quality for emissions control related purposes."

DEPARTMENT DECISION

Pursuant to Section 75-20-219(1), MCA, if DEQ determines that the proposed change would result in a material increase in any environmental impact of the facility, or a substantial change in the location of all or a portion of the facility as set forth in the certificate, DEQ is required to grant, deny or modify the amendment with conditions it considers appropriate. Under Section

75-20-219(2), MCA, if DEQ determines that the proposed change in the facility would not result in a material increase in any environmental impact or a substantial change in the location of all or a portion of the facility as set forth in the certificate, DEQ is required to automatically grant the amendment either as applied for or upon terms or conditions that DEQ considers appropriate. Therefore, whether or not there is a material increase or a substantial change in the location of all or part of the facility, DEQ has the authority to grant and condition its approval of the amendment.

In July of 1976, the Board of Natural Resources and Conservation (BNRC) issued Findings of Fact, Opinion, Decision, Order and Recommendations (BNRC's Order) regarding Colstrip Units 3 & 4. The Board determined that the facilities as proposed by Montana Power Company *et al* (collectively MPC) represent the public interest, convenience and necessity of a majority of the people of the state of Montana and the Pacific Northwest, that the facilities as proposed represent the most acceptable and desirable method for satisfying the basic need for electrical energy to the people of the State of Montana and the Pacific Northwest with a minimum of adverse environmental impact, on both the human and natural environment, considering the state of available technology and the nature and economics of the various alternatives. (BNRC's Order, p 47)

The BNRC also determined that the Board of Health and Environmental Sciences (BHES) was the authorized state agency empowered to determine whether the proposed facilities would violate state and federal standards regarding air and water quality. The BNRC recognized that the BHES had issued its own findings of fact and conclusions of law, determining that the proposed facilities would not violate state and federal standards. (BNRC's Order, p. 47) The BNRC incorporated by reference the BHES's findings of fact and conclusions of law as Exhibit A to the BNRC's Order. (BNRC's Order, p. 9) The BNRC stated that the findings of fact and conclusions of law contained in Exhibit A were conclusive on all questions related to the satisfaction of state and federal air and water quality standards.

The BNRC ordered issuance of the Certificate of Environmental Compatibility and Public Need (the Certificate) for Colstrip Units 3 & 4 as proposed by MPC in its application subject to the conditions set forth in the BNRC's conclusions of law.

The provision that PPL as seeks to amend is contained in Paragraph XV of the BHES's findings of fact. (Exhibit A, p. 11) That provision currently states as follows:

XV.

> The fuel to be used in Units #3 and #4 will be Rosebud seam coal from the Colstrip area. (Berube 7-902). It will be mined from areas designated C, D, and E, shown on Exhibits 52, 53, 140 and 141. (Berube 8-102701029; Rice 28-3635-3636, 3640-3641).

This provision is found in the context of the BHES' findings related to air emissions and air quality standards. These findings begin with Paragraph IV of Exhibit A (describing the system that would be constructed to control air emissions) and run through Paragraph XXVIII of Exhibit A.

A review of the hearing transcripts indicates that there was a question as to whether Colstrip Units 3 & 4 would use coal from the Rosebud seam or a blend of coal from the Rosebud and McKay seams. Testimony presented by MPC clarified that it was proposing to use only coal from the Rosebud seam because the emission of sulfur was easier to control using that coal. This clarification is reflected in Paragraphs X and XI of Exhibit A, which provide as follows:

X.

> Scaling in the scrubber is deterred by: (1) proper control of ph through injunction of lime as additional alkali substance to absorb sulfur dioxide and (2) recycle of the liquor with provides seed crystals of calcium sulphate so as to prevent the super-saturation of calcium sulphate in the recycled liquor . . . .

XII.

> The emission control system for Colstrip Units #3 and #4 is best suited for the Colstrip plants because it makes use of the alkalinity nature of the fly ash found in the Rosebud coal and thus reduces dependence upon additional lime injection, (Grimm, 14-1964).

The benefit of using coal from the Rosebud seam is realized whether the coal is obtained from the Rosebud seam in areas C, D, and E, or Areas A, B, F and G that are immediately adjacent to areas C, D and E.

Furthermore, Paragraph XVII of the Exhibit A provides as follows:

XVII.

> The values of the basic composition of the coal should be considered for the emissions control system, including averages, maximums and minimums proper for design of the equipment are included in Applicant's Exh. 54. (Berube 8-1042, 1043). This information is an instruction for the equipment supplier and not a description of the coal in the field. The value of 1% sulfur is a maximum for design purposes because it represents the maximum value of sulfur that the pollution control equipment will have to contend within operation. (Berube 8-1044-1046). It is the maximum value of sulfur authorized by this Board for certification purposes.

Exhibit 54 that is referenced in Paragraph XVIII is attached as Attachment 2. The composition of coal in the Rosebud seam in areas A, B, F and G fall within the range of values for which the emission control system was designed. In fact, the Rosebud coal seam in areas A, B, F and G has a lower sulfur content that in areas C, D and E. Areas C, D and E have an average sulfur content of 0.93 while areas AB, F, G and FG have average sulfur contents of 0.73, 0.70, 0.82 and 0.73, respectively. At equivalent heat input to Units 3 and 4, less sulfur (16%-22% less) and ash (10%-13%) will be produced and subsequently emitted with the use of coal from the Rosebud seam in areas A, B, F and G.

Finally, in regard to air quality emissions, DEQ's Air Resources Management Bureau – Air Permitting Section, has determined that the proposed future supply of coal from areas A, B, F and G is permissibly under Colstrip's current Montana Air Quality Permit (MAQP #0513-08). Samples of the future coal supply confirmed that it will comply with the sulfur content limitations. No increase in potential emissions is expected to occur due to the consumption of this future supply of coal and it would be delivered using the same existing equipment and methods.

While the BHES relied on the coal composition in Areas C, D, and F to determine that operation of Units 3 & 4 would not result in air quality violations, it did not rely on coal composition analysis in regard to compliance with the Montana Water Quality Act. The BHES's findings in regard to water quality begin at Paragraph XXXII of Exhibit A and run through Paragraph XXXXS of Exhibit A. The majority of these findings relate to the withdrawal of water from the Yellowstone River for use in Colstrip Units 1 through 4, which will not be affected by PPLM's use of coal from Areas A, B, F and G.

Paragraph XXXIX is relevant, finding that the various ponds which will be used for storage of water in the evaporation and disposal of water and waste materials will have seepage not anticipated to impair the quality of the ground water in the area. Similarly, the BHES's Conclusion of Law No. 6 provides as follows:

> All ponds, surge ponds, settling ponds, and impoundments shall be properly sealed. They shall be monitored for seepage, including the installation of test wells to determine the extent of ground water pollution, and the necessities of correction therefor.

Thus, the requirement that the disposal ponds be properly sealed, monitored for seepage, and the required correction of any groundwater pollution formed the BHES's determination that there would be no water quality violations rather than the composition of the coal. The use of coal from Areas A, B, F and G rather than Areas C, D, and E will not alter the BHES's finding that operation of Units 3 & 4 would not result in water quality violations. DEQ and PPLM are currently engaged in remediation of groundwater contamination under the terms of an Administrative Order on Consent (AOC). DEQ entered into the AOC under its Major Facility Siting Act and Montana Water Quality Act enforcement authority.

As an extra step of precaution, however, PPLM has conducted a compositional analysis of the coal from proposed Areas A, B, F and G, as compared to coal found in Areas C, D, E to determine whether different water quality impacts may be expected. DEQ conducted further analysis of the data provided by PPLM. In the analysis, DEQ looked at the concentration in the coal of the following parameters: antimony, arsenic, beryllium, boron, cadmium, chromium, copper, fluorine, germanium, lead, manganese, mercury, nickel, selenium, and zinc.

Coal from Areas A and B is to be consumed in a combined fashion. The parameters in AB coal that statistically are not significantly different than CDE coal include antimony, beryllium, boron, chromium, fluorine, lead, and selenium. The parameters in AB coal that are significantly different than CDE coal but are actually lower than CDE coal, include arsenic, cadmium, copper, nickel, and zinc. The parameter in AB coal that is significantly different than CDE coal, having

a lower average concentration but a higher maximum concentration, is mercury. The parameter in AB coal that is significantly different than CDE coal, having a higher concentration, is manganese.

If coal from Area F is used separately, the parameters in F coal that statistically are not significantly different than CDE coal include antimony, beryllium, boron, fluorine, lead, and selenium. The parameters in F coal that are significantly different but are actually lower than CDE coal include arsenic, cadmium, copper, germanium, mercury, nickel and zinc. The parameter in F coal that is significantly different, having a higher concentration, is manganese.

If coal from Area G is used separately, the parameters in G coal that statistically are not significantly different than CDE coal include antimony, cadmium, chromium, lead, and selenium. The parameters in G coal that are significantly different but actually lower than CDE coal include boron, copper, mercury and nickel. The parameters in G coal that are significantly different than CDE coal, having a lower average concentration but a higher maximum concentration, include arsenic, fluorine, and zinc. The parameters in G coal that are significantly different, having a higher concentration, include beryllium, fluorine, and manganese.

Coal from Areas F and G may be consumed in a combined fashion. The parameters in FG coal that statistically are not significantly different than CDE coal include antimony, cadmium, chromium, lead, and selenium. The parameters in AB coal that are significantly different but are actually lower than CDE coal include boron, copper, mercury, and nickel. The parameters in FG coal that are significantly different than CDE coal, having a lower average concentration but a higher maximum concentration, include arsenic, germanium and zinc. The parameters in FG coal that are significantly different than CDE coal, having a higher concentration, include beryllium, fluorine and manganese.

Thus, AB coal, F coal, G coal, and FG coal have statistically significant higher concentrations of manganese as compared to CDE coal, and G coal and FG coal have statistically significant higher concentrations of fluorine and beryllium as compared to CDE coal. While the concentrations of these parameters are statistically higher, the range of concentrations from each area still overlap with the ranges measured in CDE coal (beryllium: 0.11 – 0.59 ppm in CDE, 0.16 – 5.09 ppm in G and FG; fluorine: 6.96 – 78.86 ppm in CDE, 14.32 – 124.91 ppm in G and FG; manganese: 17.50 – 86.96 ppm in CDE; 52.22 – 126.58 in F; 43.76 – 151.97 ppm in G and FG; 0.13 – 119.21 ppm in AB).

This is a comparison of the concentration of trace elements in solid coal from the different areas and not a direct comparison of concentrations of the same elements in water containing coal ash from these areas. Based on available information, the composition of resulting water from AB coal, F coal, G coal, and FG coal will differ from waste from CDE coal by the same proportion. The use of coal from Areas A, B, F and G should not result in a material increase of impacts to groundwater.

Because the change proposed by PPLM in the amendment application does not result in a material increase in any environmental impact or a substantial change to all or a portion of the facility, DEQ is required to automatically grant the amendment under Section 75-20-219(2),

MCA, either as applied for or upon terms or conditions that DEQ considers appropriate. DEQ approves the proposed change as set forth in the application for amendment submitted by PPLM.

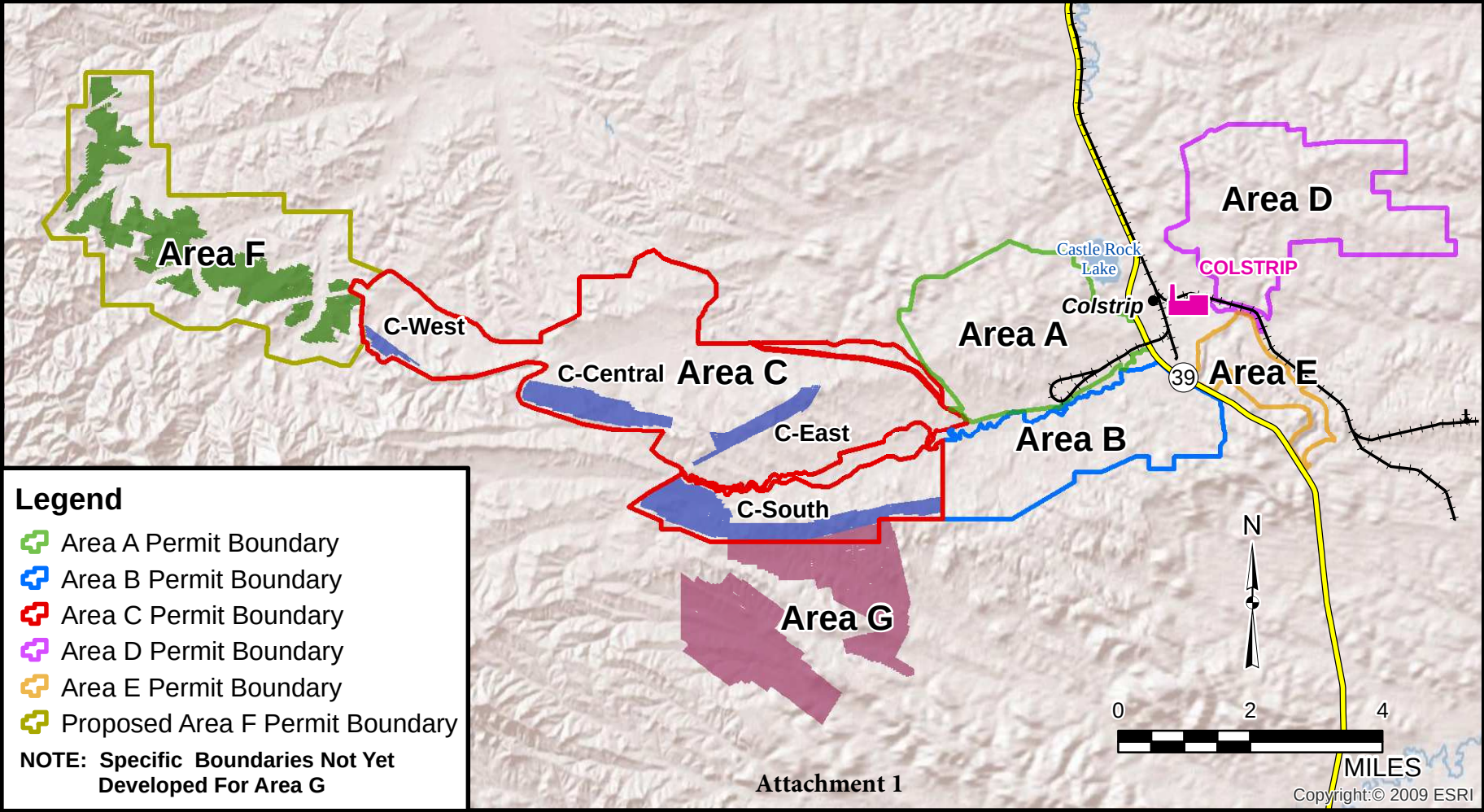
Conditions set forth in the Certificate of Environmental Compatibility and Public Need and subsequent amendments remain in full force and effect.

A person aggrieved by the final decision of DEQ on an application for amendment of a certificate may within 15 days appeal the decision to the Board of Environmental Review as provided in Section 75-20-223(2), MCA.

Dated this 1/20/15 day of January, 2015.

Tom Livers

Tom Livers
Director,
Department of Environmental Quality



Attachment 1

COAL COMPOSITION FOR
EMISSIONS CONTROL SYSTEM DESIGN

	MAXIMUM	AVERAGE	MINIMUM
MOISTURE, %	28.80	25.37	21.84
VOLATILE MATTER, %	32.39	29.67	26.95
FIXED CARBON, %	38.20	34.46	30.72
SULFUR, %	1.00	0.88	0.40
ASH, %	12.58	10.36	6.10
HEATING VALUE, BTU/LB	8878	8374	8162
LBS. OF SULFUR/MILL BTU	1.225	1.06	0.45
LBS. OF ASH/MILL BTU	15.4	12.43	6.91

NOTE:

1. EQUIPMENT IS REQUIRED TO MEET PERFORMANCE GUARANTEES OVER ENTIRE RANGE OF ABOVE VALUES, AND NOT JUST AT AVERAGE.
2. THIS TABLE IS FOR THE FUTURE AREA C COAL. TABLES FOR AREAS D & E ARE SIMILAR IN REGARD TO MAXIMUMS.

EXHIBIT 5-4

Attachment 2