

Usibelli Coal Mine, Inc.
Wishbone Hill
Response to ADEC Information Dated October 2, 2013

Usibelli Coal Mine, Inc. (Usibelli) is planning to operate a coal mining and processing facility located northeast of Palmer, Alaska. The operation will include a rock crusher and coal preparation plant with sufficient capacity to require an air quality permit under Title 18 of the Alaska Administrative Code, Section 50.502 (18 AAC 50.502), the minor permitting program. This need to obtain an air quality construction permit from the Alaska Department of Environmental Conservation (ADEC) includes a provision for the demonstration that emissions associated with the planned activities at the Usibelli Wishbone Hill project site will not interfere with maintenance of the Alaska Ambient Air Quality Standards (AAQS).

Usibelli submitted an air quality permit application to ADEC on June 28, 2013 that included a description of the likely air quality impacts to the local area based on a dispersion modeling analysis conducted in accordance with an approved modeling protocol. Upon review, ADEC has provided questions to Usibelli as listed below. Usibelli is providing the following additional information to address these questions and comments.

ADEC Request:

1. The following geographical aspects of UCM's modeling analysis, as presented in Section 6 (Attachment F of the application) need clarification:

- a. What is the horizontal datum for the digital elevation model (DEM) files that UCM used in their AERMAP run? Review of the AERMAP files indicates the DEM files are likely based on the North America Datum of 1927 (NAD27). Is that correct?
- b. Explain why the file names and receptor grids in the AERMAP input and output files do not match, or provide the correct files if UCM inadvertently submitted superseded files with their application. As stated by Enviroplan:

“The UCM supplied AERMAP input file (W514MAP.INP) has a NADA parameter setting of 1 (i.e., North American Datum of 1927, NAD27, based on Clarke 1866 ellipsoid. AERMAP accounts for shift from NAD27 to NAD83, as needed, for DEM nodes, receptors, sources, and domain). This AERMAP input file lists discrete receptor locations (UTM-x and UTM-y) different from the receptors listed in the receptor output file submitted by UCM, W051483.REC; and the name of this receptor output file is not the same as that specified in the AERMAP input file, i.e., WISH514.REC. Further, the AERMAP input file lists WISH514b.OUT as an output file (this file would show receptor versus DEM file locations), but this file was not submitted by UCM.

Based on the above findings, UCM should clarify 1) that the DEM datum input to AERMAP is NAD27; 2) the reason that the discrete receptor locations shown in W051483.REC differ from the discrete receptors listed in W514MAP.INP; and 3) that the final modeled receptors input to AERMOD (and the report figures such as Figure 1) reflect a final NAD83 datum.”

c. How did UCM derive the emission unit (EU) elevations? UCM used AERMAP to determine receptor elevations (and hill height scales). However, it is not clear how UCM derived the EU elevations. UCM should provide the basis and datum upon which EU elevations were determined.

Usibelli Response to Request 1. Usibelli began the process of evaluating the potential impacts of the planned Wishbone Hill project coal mining activities in 2008 and 2009. The initial dispersion modeling was based on an AERMAP version that had not been sufficiently coded to account for the shift in NAD from the NAD27 to NAD83 datum. Because the receptor locations were developed from NAD83 based coordinate system, and because the DEM data were based in NAD27, the NAD83 coordinates were converted to NAD27 values. These NAD27 values were then used as input to AERMAP (09DFT version). To ensure that the appropriate receptor and critical hill height values were applied to the correct NAD83 locations, the receptor information obtained from the 1927 NAD DEM files was applied to the NAD83 based receptor locations.

This procedure was duplicated each time updates were made, even with newer versions of AERMAP that can account for the NAD shift from 27 to 83. Therefore the AERMAP input files used as input the converted NAD83 determined receptor locations to NAD27 and setting a NAD indicator of “1” to conform with the NAD27 DEM basis. The output elevations and hill heights are then applied to the NAD83 receptor files so that the conversion is completed appropriately. Usibelli is providing the additional files.

The base elevations for the modeled emission units were determined from Usibelli project maps which included elevation datum based on surveys. These maps have been provided to ADEC in the permit application (e.g., Figure A-2). These maps were developed using NAD83 as the basis because the surveys of the Wishbone Hill area have been updated from those conducted earlier.

ADEC Request:

2. Please review and clarify whether UCM’s basis for determining when fugitive emissions should or should not be considered in a permit applicability determination is consistent with 40 C.F.R. 51.165(a)(1)(iv)(c) and the attached EPA guidance regarding this provision. Provide an updated stationary source identification form and supporting

project classification spreadsheets, if applicable. In the written reply, specifically address why the following EUs should or should not be “counted”:

- EU ID 9 (Coal Dumping -Crusher Feeder)
- EU ID 10 (Coal Dumping - Run-of-Mine Pile)
- EU ID 11 (Coal Reclaim from Run-of-Mine Pile)
- EU ID 25 (Wind Erosion - Run of Mine Coal Stockpile)
- EU ID 26 (Wind Erosion - Raw Coal Stockpile)
- EU ID 27 (Wind Erosion - Clean Coal Stockpile)
- EU ID 28 (Wind Erosion - Reject Stockpile)
- EU ID 32 (Coal Hauling within Mine)
- EU ID 35 (Coal Truck Haul -Loop Road)

The basis for the question is as follows:

Minor permits must conditionally assess their fugitive emissions for the purposes of permit classification in accordance with the federal rules adopted under 18 AAC 50.502(i). These adopted federal rules, detailed in 40 CFR 51.165, include a list of stationary source categories for which fugitive emissions must be assessed, i.e. a list of major stationary sources. The last stationary source category listed under 40 CFR 51.165(a)(1)(iv)(C)(27) states that “Any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the [Clean Air] Act.” is included among the list of major stationary sources. A “new source performance standard” (NSPS) for coal preparation and processing plants¹, i.e. a stationary source category regulated under Section 111 of the Act, became effective in January, 1976². Therefore, the fugitive emissions associated with this type of stationary source must be included for the purposes of permit classification.

However, surface coal mines are not among the aforementioned list of stationary source categories. Therefore, the fugitive emissions associated with the surface coal mine, i.e. those emissions not associated with the primary activity³ of the listed stationary source, do not need to be included for the purposes of permit classification⁴.

¹ 40 C.F.R. 60 Subpart Y

² Federal Register Volume 74 Number 194 Pages 51950 - 51985

³ The primary activities associated with a coal preparation and processing plant include coal processing and conveying equipment (including breakers and crushers), coal storage systems, transfer and loading systems, and open storage piles.

⁴ Janet McCabe, Indiana Office of Air Quality ("2003 McCabe Memorandum" Pages 3 and 4)

Usibelli Response to Request 2. Usibelli agrees that fugitive emissions from certain emission units associated with the coal preparation and processing plant should be included in determining whether the stationary source is or is not a major Prevention of Significant Deterioration (PSD) stationary source. Per 18 Alaska Administrative Code (AAC) 50.306(b), to meet the requirement to obtain a PSD permit an owner or operator must comply with the requirements of 40 Code of Federal Regulation (CFR) 52.21, as opposed to the requirements of 40 CFR 51.165. The applicable requirement in this case is 40 CFR 52.21(b)(1)(iii)(aa), which states "The fugitive emissions of a stationary source shall not be included in determining for any of the purposes of this section whether it is a major stationary source, unless the source belongs to one of the following categories of stationary sources: Any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act."

Usibelli agrees that 40 CFR 51.165(a)(1)(iv)(C)(27) is the correct citation for determining whether fugitive emissions count toward determining minor air quality permit applicability per 18 AAC 50.502(i). The language at 40 CFR 51.165(a)(1)(iv)(C)(27) is virtually identical to the language at 40 CFR 52.21(b)(1)(iii)(aa).

The Standards of Performance for Coal Preparation and Processing Plants, 40 CFR 60 Subpart Y, were first promulgated on January 15, 1976. As a result, coal preparation and processing plants are a stationary source category that was regulated as of August 7, 1980. Based on 40 CFR 51.21(b)(1)(iii)(aa), fugitive emissions from the Wishbone Hill coal preparation plant should be included in determining PSD applicability.

A coal preparation and processing plant is defined at 40 CFR 60.251(e) as "any facility (excluding underground mining operations) which prepares coal by one or more of the following processes: breaking crushing, screening, wet or dry cleaning, and thermal drying." Affect facilities within the coal preparation and processing plant are thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, transfer and loading systems, and open storage piles, per 40 CFR 60.250(d).

In a letter to the Indiana Department of Environmental Management dated March 6, 2003, the U.S. Environmental Protection Agency (EPA) provided guidance with respect to determining which fugitive emissions count toward permit applicability for stationary sources such as the Wishbone Hill coal mine that are not themselves affected under 40 CFR 52.21(b)(1)(iii)(aa) and 51.165(a)(1)(iv)(C)(27), but include facilities that are affected under those rules. A specific example from that guidance, which is applicable in this case, states:

“A coal mine with an onsite coal cleaning plant with a thermal dryer. The primary activity of the source, in this example, is the mining of coal, and coal mines are not a listed source category. The coal cleaning plant, however, does fall within a listed source category. You include fugitive emissions only from the coal cleaning plant to determine if the source is a major stationary source.”

Based on the definition of coal preparation and processing plant and the EPA guidance addressing fugitive emissions, the following Wishbone Hill emission units are part of the coal preparation and processing plant.

- Emission Unit (EU) 9: Coal Dumping – Crusher Feeder
- EU 10: Coal Dumping – Run-of-Mine Pile
- EU 11: Coal Reclaim – Run-of-Mine Pile
- EU 12: Crusher
- EU 13: Transfer – Crusher to Conveyor 1
- EU 14: Transfer – Conveyor to Raw Stockpile
- EU 15: Transfer – Raw Stockpile to Conveyor 2
- EU 16: Transfer – Conveyor 2 to Jig Plant
- EU 17: Transfer – Jig Plant to Conveyor 3
- EU 18: Transfer – Conveyor 3 to Reject Stockpile
- EU 19: Transfer – Jig Plant to Conveyor 4
- EU 20: Transfer – Conveyor 4 to Clean Coal Stockpile
- EU 21: Transfer – Clean Coal Stock Pile to Conveyor 5
- EU 22: Transfer – Conveyor 5 to Loadout Bin
- EU 23: Transfer – Loadout Bin to Truck
- EU 25: Wind Erosion – Run-of-Mine Coal Stockpile
- EU 26: Wind Erosion – Raw Coal Stockpile
- EU 27: Wind Erosion – Clean Coal Stockpile
- EU 28: Wind Erosion – Reject Stockpile

Fugitive emissions from these emission units must be included in determining PSD and minor air quality permit applicability. An updated permit applicability analysis for PM₁₀ is provided in Table 1. This analysis demonstrates that potential PM₁₀ emissions continue to not trigger PSD permit applicability. The analysis demonstrates that potential PM₁₀

emissions trigger minor permit applicability under 18 AAC 50.502(c)(1)(A). However, because minor permit applicability was already triggered under 18 AAC 502(b)(5), and because the minor permit application submitted to ADEC otherwise addressed the required permit application elements, the submission of additional information is not required and the permit application continues to be complete.

Note that Emission Units 9, 10, and 11 are included as elements of the coal preparation and processing plant because, in the case of Wishbone Hill, the run-of-mine pile is located immediately adjacent to the coal crusher. These emission units might not be included as elements of the coal preparation and processing plant if the run-of-mine pile was not located in the immediate vicinity of that plant.

Emission Unit 32, Coal Hauling within Mine, is not included as an element of the coal preparation and processing plant because coal hauling is a function of the mining operation, not the coal preparation and processing plant operation. Because coal mining is not affected under 40 CFR 52.21(b)(1)(iii)(aa) and 51.165(a)(1)(iv)(C)(27), fugitive emissions from coal hauling within the mine do not count toward permit applicability.

Similarly, Emission 35, Coal Truck Haul – Loop Road, is not included as an element of the coal preparation and processing plant because delivering coal to off-site locations is not an element of the coal preparation and processing plant operation.

ADEC comment:

3. Provide a fugitive dust control plan that demonstrates compliance with the assumed control efficiencies provided in the application. The plan should include type and frequency of suppressant application, to the extent such is available to the control measure proposed and its underlying basis (e.g., use of AP-42 applied road dust suppressants and related control efficiencies are based on material application frequency).

Usibelli Response to Request 3. As part of the June 28, 2013 permit application, Usibelli provided an overview of its Fugitive Dust Control Plan, consistent with the descriptions it has provided the DNR. The control of fugitive dust is dependent on a number of factors included local meteorological conditions and type of activity planned.

The dust control plan measures accounted for in the emission inventory and dispersion modeling assessment relied on the AP-42 calculation approach which considers that emissions are related to the surface material silt content and mean vehicle weight to determine the pounds of particulate per vehicle mile traveled. Usibelli applied an 80 percent control factor based on the application of water to the traveled areas and perhaps in conjunction with other dust suppressants.

In its application material Usibelli stated:

Active Fugitive Dust Controls

Fugitive dust emissions from haul roads will be controlled by watering the roads when daily minimum, ambient air temperatures are consistently above 32° Fahrenheit (F). To improve the effectiveness of haul road watering, hygroscopic dust suppressants (e.g., calcium and/or magnesium chloride) may be used. To prevent icing and safety hazards, watering will be suspended when the daily minimum ambient air temperatures are below 32° F. Regular evaluations will be conducted by Usibelli to determine the effectiveness of the watering operations.

Vehicle Speed

Fugitive dust emissions from haul roads will be controlled by imposing vehicle speed limits on the mine haul roads. Vehicle speed limits will be 25 miles per hour.

The Usibelli dust control plan is effected through control of surface silt content by watering and the limiting of fugitive dust production by vehicle speed control. Both of these methods are recommended in the AP-42 Chapter 13.2 control methodology discussion.

As part of the fugitive dust control plan, Usibelli has committed to regular evaluations of the effectiveness of watering. This commitment reflects the project operational schedules and locations of activity as well a local meteorological conditions. Under days of natural mitigation (precipitation, cloudy-humid-low wind) watering or other suppressants will not be required. Under days that are windy, dry, and warm watering may be more necessary than normal.

Usibelli will examine the meteorological forecast to prepare water suppression as needed and will visual inspect operations to understand when and to what extent water applications are effective based on the location of the activity as well as duration. Usibelli will check the silt content of the road ways to ensure that sufficient moisture is being applied to achieve the desired control efficiency as stated in the application. This process will require determination of a moisture content of approximately 3 percent to achieve the 80 percent control effectiveness. Because Wishbone Hill is a new mine site, Usibelli cannot yet predict a frequency of application to achieve dust mitigation goals. However, Usibelli will commit to updating the Department of Natural Resources (DNR) on mining activities, including dust mitigation activities as the mining operations unfold.

Usibelli will always be cognizant of and responsive to its stewardship of the environment and its desire to proactively manage any dust issues that could affect its neighbors.

ADEC comment:

4. Clarify if the values listed for vehicle miles traveled and other design parameters are consistent with the values presented in the mine application for the Department of Natural Resources.

Usibelli Response to Request 4. The information is consistent with the information that has been provided to DNR.

ADEC comment:

5. If the emissions calculations and applicability analysis change as a result of the information requested above, provide an updated computation of project PM-10 and PM-2.5 fugitive emissions.

Usibelli Response to Request 5. No changes in emission unit inventory have occurred based on the comments or discussions above. As noted in Response to Request 2, the summation of emissions is not based on changes in the inventory but rather the inclusion of more emission units in the summaries of emissions to compare with regulatory threshold levels that may be applicable to Wishbone Hill.

Table 1. Usibelli Coal Mine - Wishbone Hill Updated PM₁₀ Permit Applicability Analysis

ID	Classification	Description	Potential PM₁₀ Emissions (tpy)
1	Power Generation	Diesel-fired Engine	0.8
2	Heaters	Diesel-fired Heaters	0.6
9	Coal Mining	Coal Dumping - Crusher Feeder	16.1
10	Coal Mining	Coal Dumping - Run-of-Mine Pile	5.4
11	Coal Mining	Coal Reclaim from Run-of-Mine Pile	5.4
12	Coal Processing	Coal Crusher	2.2
13	Coal Processing	Transfer - Crusher to Conveyor 1	0.2
14	Coal Processing	Transfer - Conveyor 1 to Raw Stockpile	0.2
15	Coal Processing	Transfer - Raw Stockpile to Conveyor 2	0.2
16	Coal Processing	Transfer - Conveyor 2 to Jig Plant	0.2
17	Coal Processing	Transfer - Jig Plant to Conveyor 3	0.1
18	Coal Processing	Transfer - Conveyor 3 to Reject Stockpile	0.1
19	Coal Processing	Transfer - Jig Plant to Conveyor 4	0.1
20	Coal Processing	Transfer - Conveyor 4 to Clean Stockpile	0.1
21	Coal Processing	Transfer - Clean Stockpile to Conveyor 5	0.1
22	Coal Processing	Transfer - Conveyor 5 to Loadout Bin	0.1
23	Coal Processing	Transfer - Loadout Bin to Truck	0.1
25	Wind Erosion	Run-of-Mine Coal Stockpile	0.9
26	Wind Erosion	Raw Coal Stockpile	0.4
27	Wind Erosion	Clean Coal Stockpile	0.7
28	Wind Erosion	Reject Stockpile	0.02
		Total Potential Emissions from All Point Emission Units	1.4
		Total Potential Emissions from Coal Preparation and Processing Plant Fugitive Emission Units	32.6
		Total Potential Emissions from All Emission Units for Permit Applicability Determinations	34.0
		PSD Permit Applicability Threshold for Coal Preparation and Processing Plant	100
		PSD Applicable	No
		PSD Permit Applicability Threshold for Wishbone Hill Stationary Source	250