Application for an Air Quality Control Minor Permit

for the:

Wishbone Hill Coal Mining and Processing Operation

prepared for:

Usibelli Coal Mine, Inc.

prepared by:

Hoefler CONSULTING GROUP

May 2010

Application for an Air Quality Control Minor Permit for the Wishbone Hill Coal Mining and Processing Operation

May 2010

prepared for

Usibelli Coal Mine, Inc.
Fairbanks, Alaska

prepared by

Hoefler Consulting Group
3401 Minnesota Dr., Suite 300
Anchorage, Alaska 99503
(907) 563-2137

USIBELLI COAL MINE, INC.

634 S Bailey St, Ste 204
Palmer, Alaska 99645
Phone: 907-745-6028
Fax: 907-745-6083

May 7, 2010

Mr. John Kuterbach
Alaska Department of Environmental Conservation (ADEC)
Air Permits Program
410 Willoughby Ave., Suite 303
P.O. Box 111800
Juneau, Alaska 99811-1800

Re: Wishbone Hill Coal Mining and Processing Operation Minor Air Permit Application – Minor Air Permit Application for Coal Preparation Plant and Response to Request for Additional Information

Dear Mr. Kuterbach:

Usibelli Coal Mine, Inc. (Usibelli) is submitting the enclosed revised minor air permit application for the planned Wishbone Hill Coal Mining and Processing Operation associated with the development of mining leases located eight miles north of Palmer, Alaska.

The enclosed application has been revised based on an information request from the Alaska Department of Environmental Conservation (ADEC). More specific detail about the response to each ADEC additional information request is provided in Attachment A to this letter.

Please contact Bartly Coiley at bcoiley@usibelli.com or (907) 452-2625 or Al Trbovich of Hoefler Consulting Group at (907) 563-2140 if you have any questions regarding this application.

Sincerely,

Rob Brown
Project Manager

cc: Bartly Coiley, Usibelli Coal Mine, Inc., w/enc.
Al Trbovich, HCG, w/enc.

Attachment A
Additional Information Regarding ADEC Information Request of October 9, 2009

Note: Additional information is provided in the order presented in the ADEC request, which may not be the order in which the information appears in the revised application.

Application Attachment C – Emission Calculations

Table C-3a was revised to use the worst case particulate matter (PM_{10}) and volatile organic compounds (VOC) emission factors for Emission Unit 1.

Table C-3b was revised to correct the nitrogen oxides (NO_X) and PM_{10} emission factors for Emission Unit 2.

Table C-4 was revised to correct the PM_{10} emission factor for Emission Unit 3. Documentation supporting the expected operation, topsoil silt content and topsoil moisture content values are included in Attachment I – Supporting Documentation of the revised permit application.

Table C-5 was revised to correct the PM_{10} emission factor for Emission Unit 4 and 5. Documentation supporting the capacity value is included in Attachment I – Supporting Documentation of the revised permit application.

Tables C-6 and C-8
A scaling factor of 0.35 for PM_{10} could not be found in AP-42 Section 13.2.4 for Equation 1. Equation 1 does include a particle size multiplier of 0.35 which was included in the original emission calculations and in the calculations presented in the revised permit application. Documentation supporting the expected operation, average annual wind speed, overburden moisture content and clean coal moisture content are included in Attachment I – Supporting Documentation of the revised permit application.

Table C-7
Documentation supporting the expected operation and the run-of-mine moisture content values are included in Attachment I – Supporting Documentation of the revised permit application.

Table C-8
Please see Tables C-6 and C-8.

Table C-9 was revised with the correct calculation of potential emissions for Emission Unit 24.

ADEC correctly noted on Table C-9 the potential PM emissions from Emission Units 25 through 28 are based on AP-42, Section 13.2.5, Equation 2. The required input parameters for this equation and the values used for these specific calculations are:

- k = particle size multiplier = 0.5 (dimensionless) from the "Aerodynamic Particle Multiplier For Equation 2" in AP-42, Section 13.2.5. The particle size multiplier for particles with an aerodynamic size of less than 10 microns was used.
- N = number of surface disturbances = 36 (dimensionless). This approach conservatively assumes that winds with a friction velocity (u*) greater than the threshold friction velocity (U^*_t) occur 36 days per year, the equivalent of 10 percent of the year. This threshold friction velocity is 1.17 m/sec, which is equal to a fastest mile velocity of 21.13 m/sec or 41 knots. As shown in Figure F-6 of the permit application, a wind velocity of this magnitude is an infrequent occurrence, so assuming 36 days per year with a wind greater than the friction velocity is conservative.
- P_i g/m^2/year = erosion potential function as calculated using Equation 3, AP-42, Section 13.2.5.
- u* = friction velocity = 1.19 m/sec as calculated using Equation 4, AP-42, Section 13.2.5.
- U^+_{10} = fastest mile = 22.36 m/sec as measured at the Wishbone Hill site in Calendar Year 1990. This data set was used for the dispersion modeling analysis that was provided to ADEC as an element of the air permit application. This fastest mile was conservatively assumed to occur on each day of the year.
- U^*_t = threshold friction velocity = 1.12 m/sec for uncrusted coal piles per Table 13.2.5-2, Section 12.2.5, AP-42. This value was conservatively used for all erodible surfaces.

In reviewing Table C-9, an error was found in the PM emission calculation for Emission Units 25 through 28. That error has been corrected in the updated version of Table C-9 included in the revised permit application.

Documentation supporting the expected operation is included in Attachment I – Supporting Documentation of the revised permit application.

Tables C-10 and C-11

ADEC correctly notes that AP-42 Section 13.2.2, Equation 1a requires the use of road surface silt content. The note for Table C-10 incorrectly listed the road surface moisture content as 5 percent and has been revised to list the silt content as 5 percent. Documentation supporting the expected operation, average grader speed, road surface silt content, average weight of overburden haul tank, average weight of coal haul trucks,

and average weight of miscellaneous mine traffic values are included in Attachment I – Supporting Documentation of the revised permit application.

Updated Ambient Air Quality Analysis

The updated ambient air quality analysis updated emission information is included in Attachment F of the revised air permit application.

Sensitivity Analysis for Cloud Cover Data

The requested sensitivity analysis for cloud cover data is provided in Attachment F of the revised air permit application

Fugitive Dust Control Plan

The requested fugitive dust control plan is provided as Attachment G of the revised air permit application.

Public Access Control Plan

The public access control plan is provided as Attachment H of the revise air permit application.

Off-Site Sources

The survey of the Wishbone Hill identified no existing off-site stationary sources that would likely impact ambient air quality in the vicinity of the Wishbone Hill facility. As a result, emissions from off-site stationary sources have not been included in the ambient air quality analysis. A statement to this effect has been included in the updated ambient air quality analysis presented in Attachment F of the revised air permit application.

Background Concentrations

A discussion of background ambient concentrations has been included in the updated ambient air quality analysis presented in Attachment F of the revised air permit application.

Modeled Emission Units

A key tying the modeled emission units as denoted in the model input files to the emission unit inventory presented in Attachment C, Table C-12 has been provided in the updated ambient air quality analysis presented in Attachment F of the revised air

permit application. Emission Units Road1through Road21 (listed in Table F-2 of the original permit application) have been included in the revised air dispersion modeling.

Stationary Source Identification Form

The emission units at Wishbone Hill Coal Mining and Processing Operation are new. An updated Stationary Source Identification Form is included in the revise air quality permit application.

Resolution of Figures A-2 and A-4

New copies of Figure A-2 (Wishbone Hill Facility Map) and Figure A-4 (Wishbone Hill Plant Flow Diagram) with better resolution are included in the revised air quality permit application.

Emission Summary Form and Emission Unit Information Form

The potential emissions and certain emission factors in the Emission Summary Form and Emission Unit Information Form were revised. The revised Emission Summary Form and Emission Unit Information Form are included in the revised air quality permit application.

Attachment D – Compliance Demonstration

The demonstration of compliance with 18 AAC 50.55, particulate loading for Emission Unit 1 was revised with the correct worse case emission factor.

Alaska Department of Environmental Conservation Air Quality Minor Permit Application	**ADEC USE ONLY** Receiving Date: ADEC Control Number AQ MSS :

STATIONARY SOURCE IDENTIFICATION FORM

Section 1 Stationary Source Information

Stationary Source Name: Usibelli Coal Mine, Inc.			
Project Name (if different): Wishbone Hill Coal Mining and Processing Operation	Stationary Source Contact: Bartly Coiley		
Source Physical Address: Eight miles N of Palmer, AK Section 27, Township 19N Range 2E, Seward Meridian	City: Fairbanks	State: AK	Zip: 99701
	Telephone: (907) 452-2625		
	E-Mail Address: bcoiley@usibelli.com		
UTM Coordinates (m) or Latitude/Longitude:	Northing:	Easting:	Zone:
	Latitude:	Longitude:	

Section 2 Legal Owner

Name: Usibelli Coal Mine, Inc.		
Mailing Address: PO Box 1000		
City: Healy	State: AK	Zip: 99743
Telephone #: (907) 683-2226		
E-Mail Address:		

Section 3 Operator *(if different from owner)*

Name:		
Mailing Address:		
City:	State:	Zip:
Telephone #:		
E-Mail Address:		

Section 4 Designated Agent *(for service of process)*

Name: Keith Walters		
Mailing Address: PO Box 1000		
City: Healy	State: AK	Zip: 99743
Physical Address: 100 River Road		
City: Healy	State: AK	Zip: 99743
Telephone #:		
E-Mail Address:		

Section 5 Billing Contact Person *(if different from owner)*

Name: Bartly Coiley		
Mailing Address: 100 Cushman St.		
City: Fairbanks	State: AK	Zip: 99701
Telephone #: (907) 452-2625		
E-Mail Address: bcoiley@usibelli.com		

Section 6 Application Contact

Name: Bartly Coiley			
Mailing Address: 100 Cushman St.	City: Fairbanks	State: AK	Zip: 99701
	Telephone: (907) 452-2625		
	E-Mail Address: bcoiley@usibelli.com		

Section 7 Desired Process Method *(Check only one – see 18 AAC 50.542(a) for process descriptions and restrictions)*

☐ Fast Track [18 AAC 50.542(b)] ☒ Public Comment [18 AAC 50.542(d)]

Section 8 Project Description

Provide/attach a short narrative describing the project. Discuss the purpose for conducting this project, what emission units/activities will be added/modified under this project (i.e., project scope), and the project timeline. If the project is a modification to an existing stationary source, describe how this project will affect the existing process. Include any other discussion that may assist the Department in understanding your project or processing your application. Include a schedule of construction and the desired date for permit issuance.

If this application includes an Owner Requested Limit or a request to revise an existing permit term or condition, describe the intent of the limit, and provide sample language for the limit, and for monitoring, record keeping, and reporting for showing compliance with the limit.

Add additional pages if necessary.

A project description is provided in Attachment A. This application does not include an Owner Requested Limit.

Section 9 Source Classification(s) *(Check all that apply)*

[18 AAC 50.502(b)]

- ☐ Asphalt Plant [≥ 5 ton per hour]
- ☐ Thermal Soil Remediation Unit [≥ 5 ton per hour]
- ☐ Rock Crusher [≥ 5 ton per hour]
- ☐ Incinerator(s) [total rated capacity ≥ 1000 lb/hour]
- ☒ Coal preparation plant
- ☐ Port of Anchorage Facility

If you checked any of the above, is (are) the emission unit(s) ☒ new, ☐ relocated*, or ☐ existing?

[18 AAC 50.502(c)(1)]

New or relocated* stationary source with potential emissions greater than:

- ☒ 40 tons per year (TPY) NOx
- ☐ 40 tons per year SO_2
- ☐ 15 tons per year PM-10
- ☐ 0.6 tons per year lead
- ☐ 100 tons per year CO in a nonattainment area

[18 AAC 50.502(c)(2)]

Construction or relocation* of a:

- ☐ Portable oil and gas operation
- ☐ 10 MMBtu/hr fuel burning equipment in a SO_2 special protection area

**Relocation does NOT include moving equipment from one place to another within your current stationary source boundary.*

Section 10 Modification Classification(s) (*Check all that apply)*

[18 AAC 50.502(c)(3)]

- ☐ NO_x Increase > 10 TPY [and existing PTE > 40 tons per year]
- ☐ SO_2 Increase > 10 TPY [and existing PTE > 40 tons per year]
- ☐ PM-10 Increase > 10 TPY [and existing PTE > 15 tons per year]
- ☐ CO Increase > 100 TPY [and existing PTE > 100 tons per year in a nonattainment area]

Basis for calculating modification:

- ☐ Projected actual emissions - baseline actual emissions
- ☐ New potential emissions - existing potential emissions

Section 11 Permit Action Request (*Check all that apply)*

[18 AAC 50.508]

- ☐ ~~Clean Unit designation~~ *(vacated by Court)*
- ☐ ~~Pollution Control Project designation~~ *(vacated by Court)*
- ☐ Establish Plantwide Applicability Limitation
- ☐ Establish emission reductions to offset nonattainment pollutant
- ☐ Owner Requested Limit*
- ☐ Revise or Rescind Title I Permit Conditions*

Permit Number: Date: Condition #:

**Which to use? See* http://www.dec.state.ak.us/air/ap/docs/orlrtc.pdf

Section 12 Existing Permits and Limits

For an existing stationary source, do you have an existing:
(Check any that apply)

- ☐ Air quality permit Number(s)*:
- ☐ Owner Requested Limit Number(s):
- ☐ Pre Approved (Emission) Limit Number(s)**:

** All valid construction, Title V, and minor permit numbers.*
***Optional. Please provide this number if possible.*
See http://www.state.ak.us/dec/air/ap/pals.htm

Section 13 Other Application Material

The information listed below must be included in your air quality control minor permit application. *Note: These must be attached in order for your application to be complete.*

If required to submit an analysis of ambient air quality under 18 AAC 50.540(c)(2), or if otherwise requested by the department:

☒ Attached are maps, plans, and/or aerial photographs as necessary to show the locations and distances of

- emissions units, buildings, emitting activities and boundaries of the associated with the stationary source, and
- nearby or adjacent residences, roads, other occupied structures and general topography within 15 kilometers.

(Indicate compass direction and scale on each.)

☒ Attached is a document (eg., spreadsheet) showing coordinates and elevations of each modeled unit, along with parameters necessary to characterize each unit for dispersion modeling.

☒ Attached is an electronic copy of all modeling files.

If located within an approved coastal district:

☐ Attached is a completed Coastal Project Questionnaire (CPQ) for the stationary source

Section 14 Certification

This certification applies to the Air Quality Control Minor Permit Application for the Wishbone Hill Coal Washing Plant (Stationary Source Name) submitted to the department on: May 2010.

Type of Application

☒ Initial Application

☐ Change to Initial Application

The application is **NOT** complete unless the certification of truth, accuracy, and completeness on this form bears the **signature of a responsible official** of the firm making the application. (18 AAC 50.205)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS

"Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete."

Signature: Robert M. Brown	Date: 05/07/2010
Printed Name: Robert M. Brown	Title: Project Manager

Section 15 Attachments

☒ Attachments Included. List attachments:

- A – Project Description
- B – Emission Unit Information and Emissions Summary Forms
- C – Emission Calculations
- D – Demonstration of Compliance with 18 AAC 50.055
- E – Caterpillar Engine Specifications
- F – Ambient Air Quality Analysis
- G – Fugitive Dust Control Plan
- H – Public Access Control Plan
- I – Supporting Documentation
- J – Electronic Files

Section 16 Mailing Address

Submit the minor permit application to the Construction Permit Supervisor in the department's Juneau office. Submitting to a different office will delay processing. The mailing address and phone number for the Juneau office is:

ADEC, Air Permits Program
410 Willoughby Ave., Suite 303
P.O. Box 111800
Juneau, AK 99811-1800

(907) 465-5100

Attachment A

Project Description

Wishbone Hill Project Description

Usibelli Coal Mine Inc. (Usibelli) is planning to operate a coal mining and processing facility at the Wishbone Hill located northeast of Palmer, Alaska. Exploration and development work on the Wishbone Hill Project has been in progress since 1983. Exploration drilling has defined a reserve of high quality bituminous coal permitted to be mined up to 1.0 million metric tons of clean coal per year.

The area to be mined lies at the western end of the Wishbone Hill coal district on the southwestern extent of Wishbone Hill. A location map is provided in Figure A-1. Wishbone Hill is a synclinal structure bisected by several major transverse and low angle thrust faults. Four main coal seam groups are proposed for mining during the life of the project. These groups are, in descending order, the Jonesville, Premier, Eska, and Burning Bed groups, with the majority of the recoverable coal located in the Premier group. An individual coal seam not associated with any of the coal groups, the Midway seam, which lies between the Premier and Eska groups is also planned for mining. A more detailed map of the planned mine is provided in Figure A-2.

The mining method for the Wishbone Hill Project has been selected after careful consideration of the geologic conditions, climatic conditions, and mine plan for the project. The overall mining method has been designed to allow for optimal equipment utilization and coal recovery to accomplish a continuous pattern from topsoil removal through reclamation while ensuring environmental protection.

Topsoil will be removed with dozers or scrapers and will either be used immediately for reclamation or stockpiled for later use. Overburden and coal will be removed with a hydraulic excavator and placed into 150-ton capacity haul trucks. Due to steeply dipping seams and the depth of the mining pit, direct haul back of overburden and interburden material is not always possible, and so these materials may be temporarily stockpiled in designated areas.

The coal will be washed or cleaned using simple washing and separation techniques without the use of chemicals. Coarse coal refuse generated at the wash plant will be hauled back to the mine area for backfill in the pit. Fine coal refuse will be deposited in a storage pond. The clean coal will be hauled offsite using road-legal trucks.

The main elements of the coal processing plant are a run-of-mine stockpile, a run-of-mine hopper, the crushing and screening plant, the preparation plant, and the clean coal stockpile. A plot plan of the coal processing plant facilities is provided in Figure A-3. A process flow diagram of the coal treatment process is provided in Figure A-4.

The coal will be transported to the wash plant from the pit area in 150-ton capacity haul trucks. At the wash plant, the coal will be either stockpiled or direct loaded into the run-of-mine hopper for processing through the wash plant. The run-of-mine stockpile has a capacity of 100,000

tons to enable continued plant operation during any unexpected lapses in haulage from the pit area. A front end loader will be used to load the stockpiled coal into the hopper for processing.

The hopper will feed coal to a grizzly for sizing, then onto a feed breaker to further reduce the material size to a maximum of 8 inches. This feed will proceed to the crushing and screening circuit for sizing at 3-inch and 3/8-inch. The material falling between 3-inch and 3/8-inch will be the feed to the preparation circuit. Plus 3-inch material will pass through a grizzly and be crushed to a maximum 3-inch size. These two streams will be recombined before entering the preparation circuit. The minus 3/8-inch material will be separated and will either be blended into the feed stream for the washing circuit or blended with the clean coal being shipped from the facility. The 3-inch to 3/8-inch material will be processed through the wash plant which will consist of heavy media cyclones and spirals to separate the coal from the parting material. The final step will be to centrifuge the fine clean coal to reduce the moisture content.

Under maximum production, the plant will be operated seven days per week, three 8-hour shifts per day. No chemicals, other than inert flocculent used to settle the fine coal waste, will be used in the washing process. Drying will be accomplished using a centrifuge. No thermal drying of washed coal is planned.

Coarse coal refuse will be loaded from the coarse coal refuse bin into the same trucks hauling coal to the plant for transport back to the pit area. The refuse will be directly placed in areas of current backfilling and will be buried a minimum of four feet below the regarded surface of the overburden material.

Onsite coal storage will be located as shown on Figure A-3, adjacent to the processing plant. A truck loadout bin will be used to load the stockpiled coal into highway-legal, covered trucks for delivery.

Figure A-1. Wishbone Hill Location Map

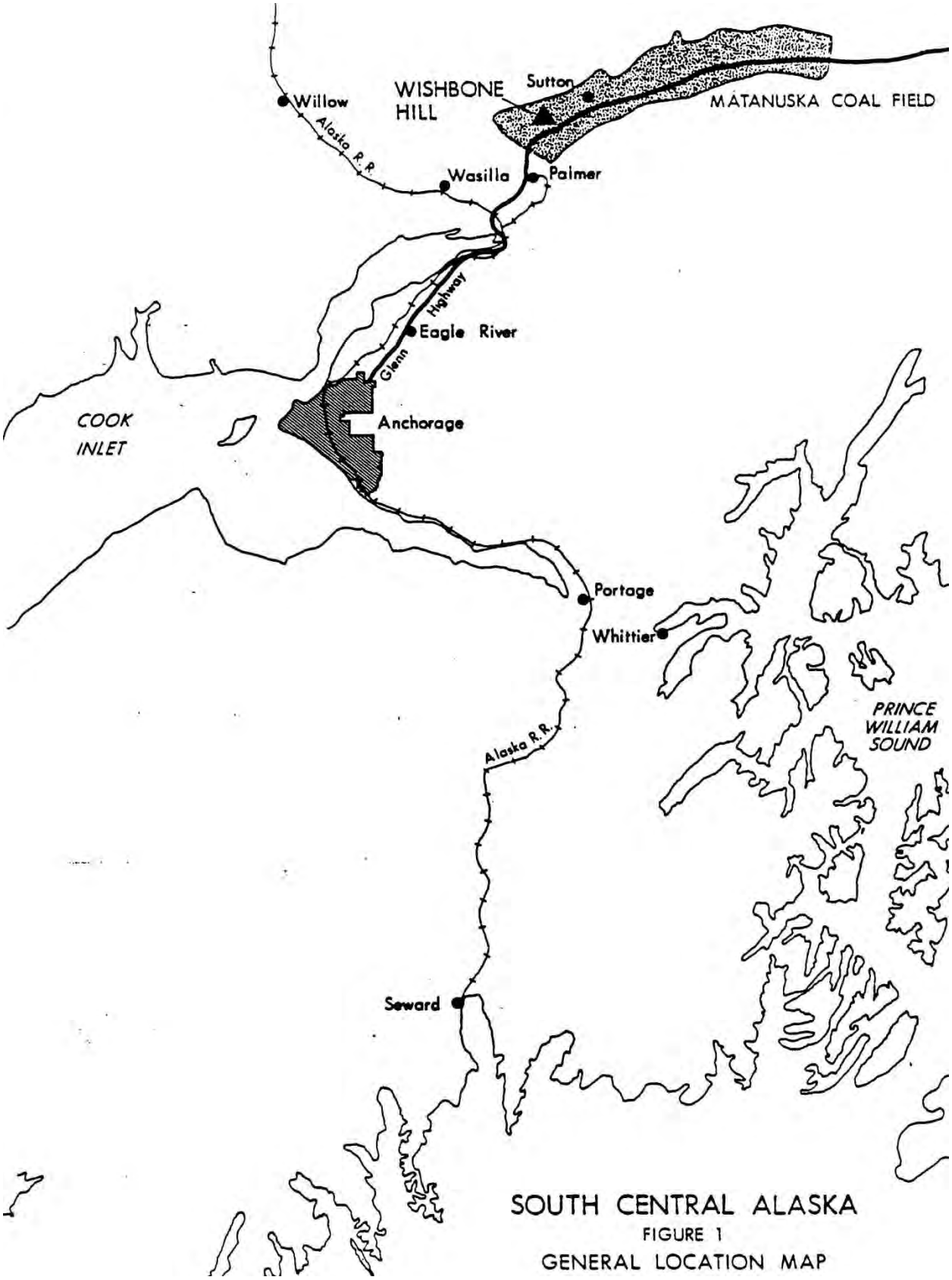


Figure A-2. Wishbone Hill Facility Map

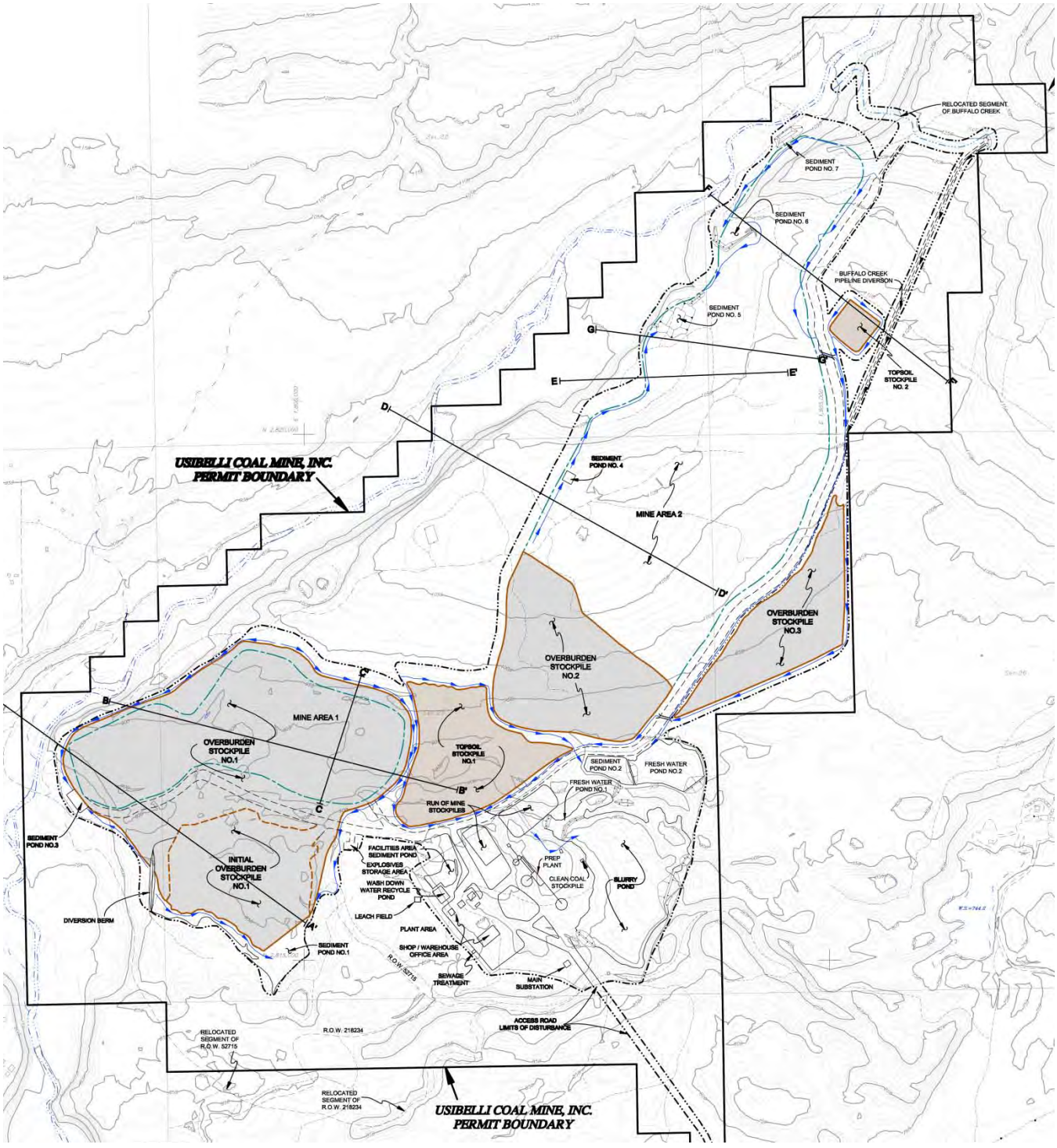
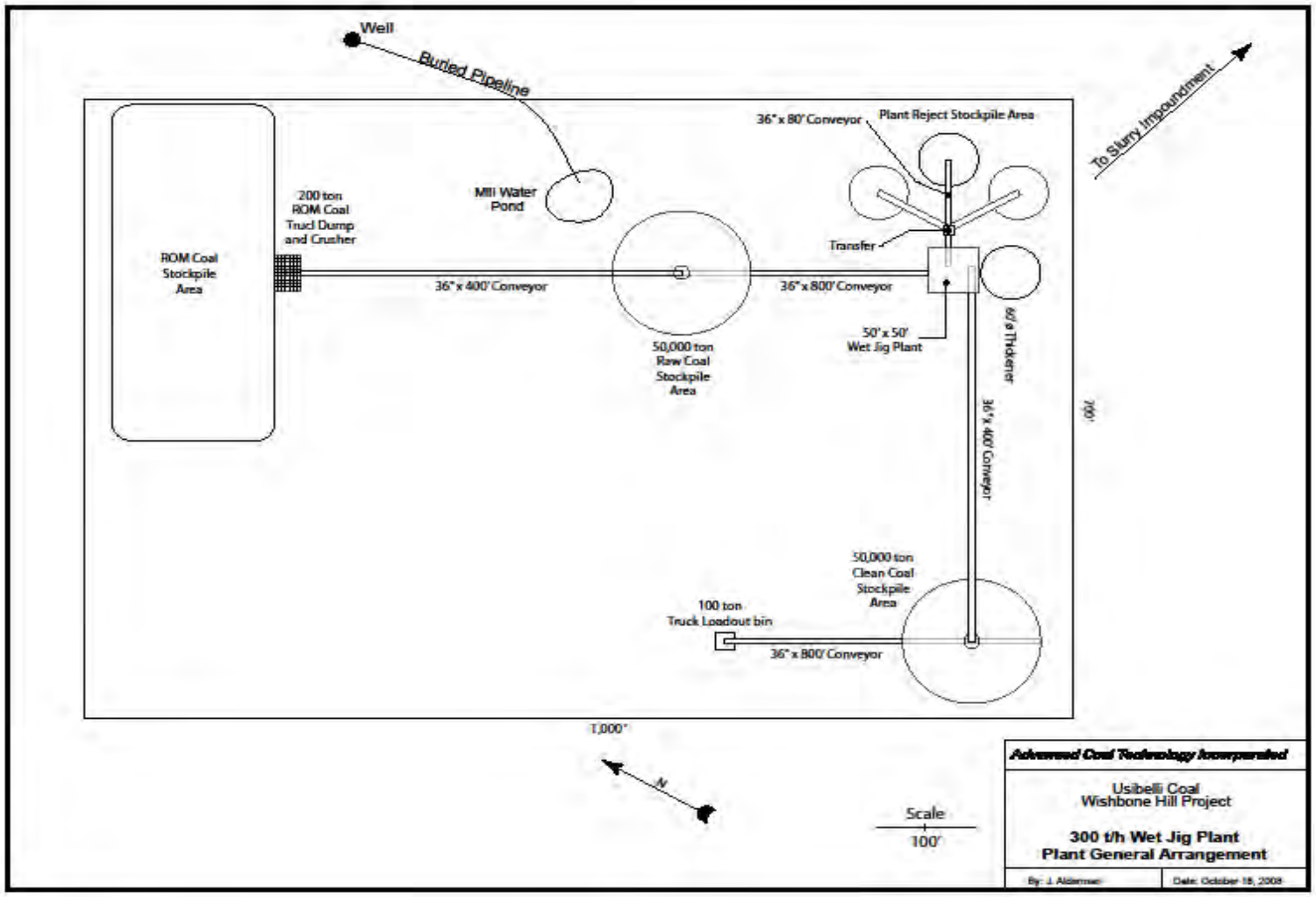
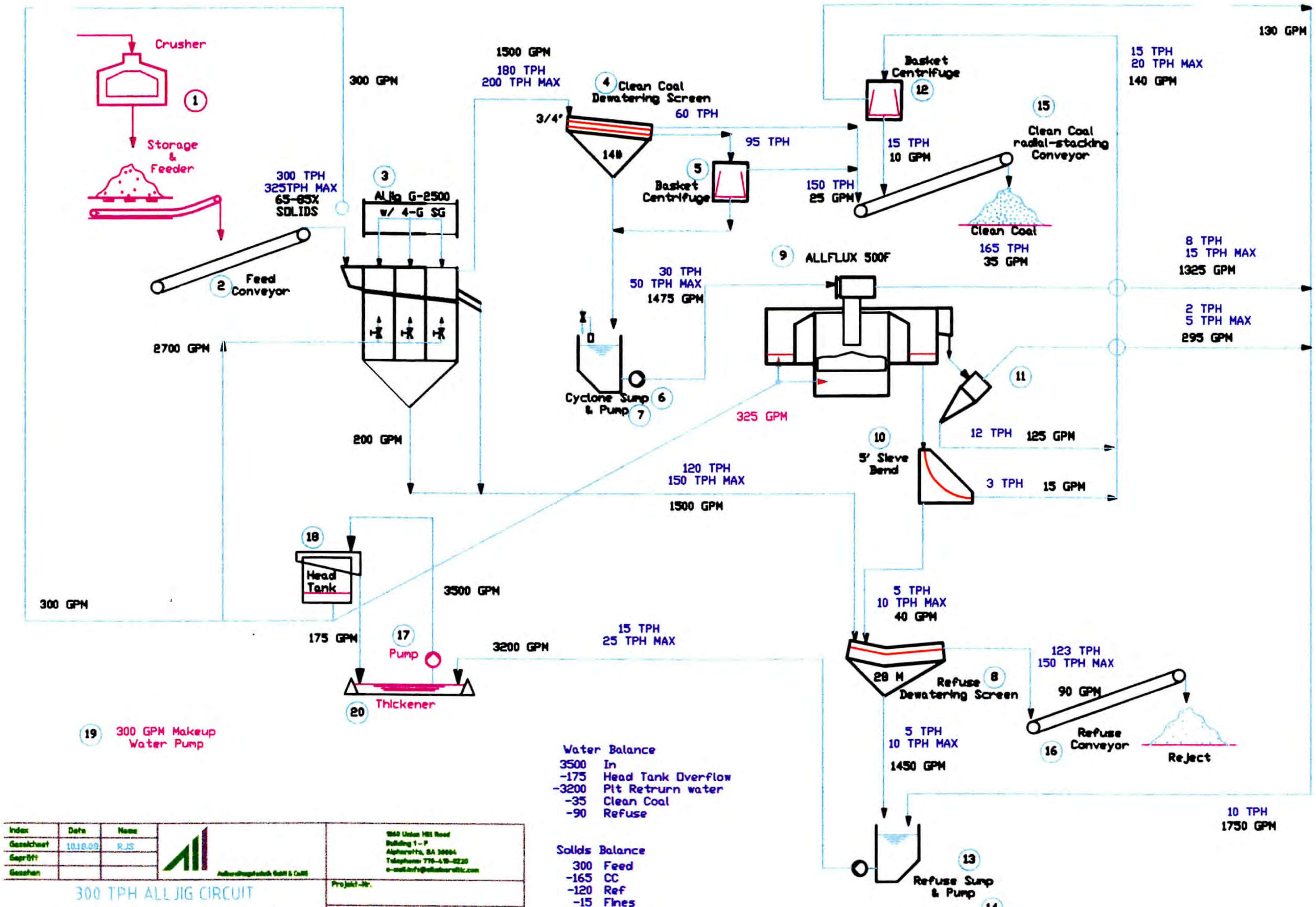


Figure A-3. Wishbone Hill Coal Processing Plant Arrangement





Water Balance

3500	In
-175	Head Tank Overflow
-3200	Pit Retrurn water
-35	Clean Coal
-90	Refuse

Solids Balance

300	Feed
-165	CC
-120	Ref
-15	Fines

Flowsheets/Coal/6580a

Index	Date	Name
Gezeichnet	10.18.09	RJS
Geprüft		
Gesehen		

Aufbereitungstechnik GmbH & Co.KG

1960 Union Hill Road
Building 1 - F
Alpharetta, GA 30004

300 TPH ALLJIG CIRCUIT
Usibelli Preliminary Flowsheet

Projekt-Nr.

Zeichnungs-Nr. 6580aFS

Attachment B

Emission Unit Information and Emission Summary Forms

Alaska Department of Environmental Conservation Air Quality Control Minor Permit Application	ADEC USE ONLY Receiving Date: ADEC Control #:

EMISSIONS SUMMARY FORM
NEW STATIONARY SOURCE

Section 1 Stationary Source Information

Stationary Source Name: Usibelli Coal Mine, Inc.	Stationary Source Physical Address: 8 miles North of Palmer, AK	City: N/A

Section 2 Potential to Emit – CO, NO_x, PM-10, SO_2, lead

Emission Unit No.	Capacity	Potential to Emit (TPY)				
		CO *(If within 10 km of nonattainment area)*	NO_X	PM-10	SO_2	lead
1	900 hp		61.3	0.8	0.04	0.0
2	10 MMBtu/hr		6.5	0.6	0.1	0.0
3 through 35	N/A - Fugitives		0.0	494.4	0.0	0.0
TOTAL TONS PER YEAR:			67.8	495.8	0.1	0.0

☒ Detailed emissions calculations are attached. *Note: For calculations other than (rated capacity) times (emission factor), these must be attached in order for your application to be complete. You may give an example calculation where the method of calculation is identical for multiple emission units..*

Include multiple copies of this page if more space is required.

Alaska Department of Environmental Conservation
Air Quality Control Minor Permit Application

ADEC USE ONLY
Receiving Date:
ADEC Control #:

MINOR PERMIT APPLICATION – EMISSION UNIT INFORMATION

FOR A NEW STATIONARY SOURCE: Complete this form for all emission units.

FOR A MODIFICATION TO AN EXISTING STATIONARY SOURCE:

IF YOU HAVE A TITLE V PERMIT: Complete this form for each emissions unit that is new or that is affected by a physical change or change in the method of operation.

IF YOU DO NOT HAVE A TITLE V PERMIT: Complete this form for all emissions units.

Section 1 Stationary Source Information

Source Name: Usibelli Coal Mine, Inc.
Source Physical Address: 8 miles North of Palmer, AK
City: N/A

Section 2 Emission Unit Identification and Description

Emission Unit No.	Equipment Type	Make	Model	Serial No.	Max. Rated Capacity or Max. Design Throughput
1	IC Engine	Caterpillar	C-18	To Be Determined	900 hp
2	Heaters	To Be Determined	To Be Determined	To Be Determined	10 MMBtu/hr (total capacity, all units)
3 through 35	Fugitive Emissions	N/A	N/A	N/A	N/A

Section 3 Emission Unit Use

Emission Unit No.	Is unit portable?		If portable, is unit:						Is this unit a:		If limited operation, is the unit:			
[List same emissions= units as in Section 2.]	Yes	No	- a non road engine? Yes	No	- classified as intermittently used oil field support equipment per Policy 04.02.105? Yes	No	- classified as an oil field construction unit per Policy 04.02.104? Yes	No	primary (base load) unit?	or limited operation unit?	peaking unit?	black start unit?	Emergency / back-up unit?	or other?
1	☐	☒	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
2	☐	☒	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
3 through 35	☐	☒	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
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	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Section 4 Fuels

Complete Section 4a or 4b for each emissions unit, as appropriate.

Section 4a Fuel Burning Equipment not including flares

Emission Unit Number	Fuel Type(s)	Maximum fuel sulfur content*	Fuel Density (if liquid fuel) lb/gal	Higher Heating Value**	Maximum design fuel consumption rate
1	ULSD	15 ☐ wt. % ☒ ppm	6.8	135K ☒ btu/gal ☐ Btu/dscf Other	43 gal/hr
2	ULSD	15 ☐ wt. % ☒ ppm	6.8	135K ☒ btu/gal ☐ Btu/dscf Other	74 gal/hr total
3 through 35	N/A	N/A ☐ wt. % ☐ ppm	N/A	N/A ☐ btu/gal ☐ Btu/dscf Other	N/A
		☐ wt. % ☐ ppm		☐ btu/gal ☐ Btu/dscf Other	
		☐ wt. % ☐ ppm		☐ btu/gal ☐ Btu/dscf Other	
		☐ wt. % ☐ ppm		☐ btu/gal ☐ Btu/dscf Other	
		☐ wt. % ☐ ppm		☐ btu/gal ☐ Btu/dscf Other	
		☐ wt. % ☐ ppm		☐ btu/gal ☐ Btu/dscf Other	
		☐ wt. % ☐ ppm		☐ btu/gal ☐ Btu/dscf Other	
		☐ wt. % ☐ ppm		☐ btu/gal ☐ Btu/dscf Other	
		☐ wt. % ☐ ppm		☐ btu/gal ☐ Btu/dscf Other	

**Use Weight percent sulfur for liquid fuels. Use parts per million H_2S for gaseous fuels.*
***Use Btu per gallon for liquid fuels. Use Btu per dry standard cubic foot for gaseous fuels.*

Use more than one sheet if necessary.

Section 4b Flares

Complete this section if the stationary source contains a flare.

Emission Unit Number:	Heat release rate for pilot / purge operation (MMBtu/hr)	Maximum heat release rate (MMBtu/hr)	Flare gas heat content (Btu/scf)	Flare gas H_2S content (ppm)
None				

☐ See attached for additional details

Section 5 Materials Processed and Methods of Operation

Emission Unit Number	Materials Processed	Maximum Material Processing rate	Describe Method of Operation
	Coal	350 tons per hour	Coal crushing operating with conveyors for transfers

☒ See attached for additional details.

Use more than one sheet if necessary.

Section 6 Emission Control Information (if applicable)

Emission Unit Number:	Control equipment	Pollutant(s) Controlled:	Description of the Control equipment	Describe significant operating parameters and set points for the control equipment	The Control equipment is Necessary:		
					To comply with an emission standard?	To avoid a project classification	Other – give purpose of control equipment
1	N/A	N/A	N/A	N/A	☐	☐	
2	N/A	N/A	N/A	N/A	☐	☐	
3 through 35	N/A	N/A	N/A	N/A	☐	☐	
					☐	☐	
					☐	☐	
					☐	☐	
					☐	☐	
					☐	☐	
					☐	☐	
					☐	☐	
					☐	☐	

☐ See attached for additional details

Section 7 Emission Factors

Give exact citations of emission factor sources.

Emission Unit Number:	Emission factor for NOx:	Emission factor source*	Emission Factor for SO2	Emission factor source*	Emission factor for PM-10	Emission factor source*	Emission Factor for CO (if within 10 km of nonattainment area)	Emission factor source*	E mission factor for Lead (if new Stationary Source)	Emission factor source*
1	14 lb/hr	Vendor	15 ppm S (ULSD)	mass balance	0.18 lb/hr	Vendor	N/A	N/A	N/A	N/A
2	20 lb/1,000 gal	AP-42 Table 1.3-1	15 ppm S (ULSD)	mass balance	2 lb/1,000 gal	AP-42 Table 1.3-1	N/A	N/A	N/A	N/A
3 through 35	N/A	N/A	N/A	N/A	Various	AP-42, See Attachment C	N/A	N/A	N/A	N/A

☒ For Emission factors from sources other than published data (such as AP-42), documentation is attached.

*Emission factor source: e.g., AP-42, vendor, source test etc.

Use more than one sheet if necessary.

Section 8 Emission Unit Limits

Emission Unit Number:	Existing Operational Limit if any	Proposed Operational Limit if any	Is the emission unit designated a Clean Unit?	Are you applying for Clean Unit designation?	If emission unit is or would be a Clean Unit, for which pollutant(s)?	Is the emission unit designated as part of a Pollution Control Project?	Are you applying for designation as a Pollution Control Project?
1	N/A	N/A	☐ Yes ☒ No	☐ Yes ☒ No	N/A	☐ Yes ☒ No	☐ Yes ☒ No
2	N/A	N/A	☐ Yes ☒ No	☐ Yes ☒ No	N/A	☐ Yes ☒ No	☐ Yes ☒ No
3 though 35	N/A	N/A	☐ Yes ☒ No	☐ Yes ☒ No	N/A	☐ Yes ☒ No	☐ Yes ☒ No
			☐ Yes ☐ No	☐ Yes ☐ No		☐ Yes ☐ No	☐ Yes ☐ No
			☐ Yes ☐ No	☐ Yes ☐ No		☐ Yes ☐ No	☐ Yes ☐ No
			☐ Yes ☐ No	☐ Yes ☐ No		☐ Yes ☐ No	☐ Yes ☐ No
			☐ Yes ☐ No	☐ Yes ☐ No		☐ Yes ☐ No	☐ Yes ☐ No
			☐ Yes ☐ No	☐ Yes ☐ No		☐ Yes ☐ No	☐ Yes ☐ No
			☐ Yes ☐ No	☐ Yes ☐ No		☐ Yes ☐ No	☐ Yes ☐ No
			☐ Yes ☐ No	☐ Yes ☐ No		☐ Yes ☐ No	☐ Yes ☐ No
			☐ Yes ☐ No	☐ Yes ☐ No		☐ Yes ☐ No	☐ Yes ☐ No

☐ Further explanation is attached. *(Attach if necessary)*

Is your stationary source subject to a Plantwide Applicability Limitation? ☐ Yes ☒ No

If yes: Which pollutant(s)? _____

Describe the limitation.

Are you applying for a PAL? ☐ Yes ☒ No If yes, which pollutnat(s)?

Section 9 Applicable State Emission Limits (listed in 18 AAC 50.050 through 18 AAC 50.090)

Complete this section for emissions units that are new or are affected by the physical change or change in operation.

Emission Unit Number:	**Emission Limit or Standard**	**Regulation Citation**
1	Visible Emissions, Particulate Matter, and Sulfur Compound Emissions	18 AAC 50.055(a)(1), (b)(1), and (c)
2	Visible Emissions, Particulate Matter, and Sulfur Compound Emissions	18 AAC 50.055(a)(1), (b)(1), and (c)

☒ A demonstration of compliance for each emission limit or standard must be attached in order for the application to be considered complete.

Use more than one sheet if necessary.

Section 10 Incinerators

In addition to Sections 1 – 9, complete this section if the stationary source contains an incinerator.

Emission Unit Number:	Rated capacity in lbs / hour	Type of waste burned
None		
☐ See attached for additional details		

Section 11 Asphalt Plant

If the stationary source is an asphalt plant, complete this section instead of Section 2.

	Make and Model	Primary burner size (Btu per hour)	Chamber Size (Cubic Feet)	Maximum Fuel Feed: ☐Gallon/hr ☐Scf/hr
☐ Dryer:	None			
☐ Afterburner :				
☐ Dryer:				
☐ Afterburner :				

If emission unit is an asphalt plant, identify each piece of installed equipment by placing an "x" in the box beside the piece of equipment. If the equipment listed has a place to provide the size and capacity, provide that additional information. List only diesel engines that are stationary.

Material handling devices:
- ☐ Conveyors,
- ☐ Loaders,
- ☐ Bins,
- ☐ Elevators,
- ☐ Screens, or
- ☐ Chutes

Dryer Control Devices:
- ☐ Baghouse
- ☐ Cyclone
- ☐ Scrubber
- ☐ Knockout box

Any of the following:
- ☐ Asphalt cement heaters,
- ☐ Fuel Fired Silo Heaters
- ☐ Mixers
- ☐ Pug mills
- ☐ Other Emission Control Equipment. List:

  _____
  _____
  _____
- ☐ Diesel Engines:

  Make & model _____, Size _____hp, Max fuel rate_____gal/hr
  Make & model _____, Size _____hp, Max fuel rate_____gal/hr
  Make & model _____, Size _____hp, Max fuel rate _____gal/hr

Distance from dryer exhaust outlet to:

Nearest residence _____

Other occupied structure _____

Was the asphalt plant last constructed, modified or reconstructed before or after June 11, 1973?

Before?

After?

If requested by the department:

- ☐ Attached is a copy of the operation and maintenance plan for the unit.
- ☐ Attached is
  - ☐ a copy of the most recent particulate matter source test if within the last five years; or
  - ☐ a schedule for conducting the test.
- ☐ For an asphalt plant within one mile of the nearest residence or occupied structure, a fugitive dust control plan is attached.

Section 12 Soil Remediation Unit

If the stationary source is a soil remediation unit, complete this section instead of Section 2.

	Make and Model	Primary burner size (Btu per hour)	Chamber Size (Cubic Feet)	Maximum Fuel Feed: ☐Gallon/hr ☐Scf/hr
☐ Dryer, rotary kiln, combustion device in fluidized bed, etc.:	None			
☐ Afterburner :				
☐ Dryer, rotary kiln, combustion device in fluidized bed, etc.:				
☐ Afterburner :				

Identify each piece of installed equipment by placing an "x" in the box beside the piece of equipment. If the equipment listed has a place to provide the size and capacity, provide that additional information. List only diesel engines that are stationary.

Material handling devices:
- ☐ Conveyors,
- ☐ Loaders,
- ☐ Bins,
- ☐ Elevators,
- ☐ Screens, or
- ☐ Chutes

Dryer Control Devices:
- ☐ Baghouse
- ☐ Cyclone
- ☐ Scrubber
- ☐ Knockout box

☐ Other Emission Control Equipment. List:

_____

_____

_____

☐ Diesel Engines:

Make & model _____, Size _____hp, Max fuel rate_____gal/hr
Make & model _____, Size _____hp, Max fuel rate_____gal/hr
Make & model , Size hp, Max fuel rate gal/hr

Storage areas for
- ☐ Untreated soils (Describe)
  If storage bin provide the date installed:
- ☐ Treated soils (Describe)
  If storage bin provide the date installed:

☐ Enclosed truck loading station Date Installed:
☐ Railcar loading station Date Installed:

Distance from emission unit outlet to:

Nearest residence _____
Other occupied structure _____

☐ Attached is a VOC and dust control plan. ☐ Attached is a carbon monoxide continuous emission monitor performance test report, or schedule for conducting the test. ☐ Attached is an approval from Spill Protection and Response (SPAR) of your facility Contaminated Sites Workplan.	If requested by the department: ☐ Attached is a copy of the operation and maintenance plan for the unit. ☐ Attached is ☐ a copy of the most recent particulate matter source test if within the last five years; or ☐ a schedule for conducting the test.

Section 13 Rock Crushers

If the stationary source is a rock crusher, complete this section instead of Section 2.

Initial Crushers			**Other Crushers**	
Equipment Id.	Rated capacity (Tons per hour)		Equipment Id.	Rated capacity (Tons per hour)
None				
Other Grinding Mills			**Screening Operations**	
Equipment Id.	Rated capacity (Tons per hour)		Equipment Id.	Rated capacity (Tons per hour)
Belt Conveyors			**Belt Conveyors**	
Equipment Id.	Rated capacity (Tons per hour)		Equipment Id.	Rated capacity (Tons per hour)

Bucket Elevators			**Storage Bins**	
Equipment Id.	Rated capacity (Tons per hour)		Equipment Id.	Rated capacity (Tons per hour)
Bagging Operations			**Enclosed Truck or Railcar Loading Stations**	
Equipment Id.	Rated capacity (Tons per hour)		Equipment Id.	Rated capacity (Tons per hour)
Distance from equipment listed above to: Nearest residence _____ Other occupied structure _____			If requested by the department: ☐ For a rock crusher, a fugitive dust control plan is attached.	

NOTE: Rock Crushers and Asphalt Plants may be subject to federal New Source Performance Standards (40 C.F.R. 60, Subparts I and OOO.) The department no longer enforces these standards through minor permit. Address all correspondence about compliance with these standards to EPA.

Attachment C

Emission Calculations

Table C-1. Usibelli Coal Mine - Wishbone Hill Emission Unit Inventory

ID	Classification	Description	Type	Capacity	Expected Operation
1	Power Generation	Diesel-fired Engine	Point	900 hp	8,760 hr/yr
2	Heaters	Diesel-fired Heaters	Point	10.0 MMBtu/hr	8,760 hr/yr
3	Topsoil Operations	Topsoil Removal to Storage	Fugitive	N/A	2,660 hr/yr
4	Blasting Operations	Overburden Blasting	Fugitive	10,890 ft^2/blast	240 blast/yr[1]
5	Blasting Operations	Coal Blasting	Fugitive	10,890 ft^2/blast	120 blast/yr[1]
6	Overburden	Overburden Truck Loading	Fugitive	15,459,000 yd^3/yr	10,306,000 tpy
7	Overburden	Overburden Dumping	Fugitive	15,459,000 yd^3/yr	10,306,000 tpy
8	Coal Mining	Coal Removal	Fugitive	1,815,000 tpy	8,760 hr/yr
9	Coal Mining	Coal Dumping - Crusher Feeder	Fugitive	1,815,000 tpy	8,760 hr/yr
10	Coal Mining	Coal Dumping - Run-of-Mine Pile	Fugitive	605,000 tpy	8,760 hr/yr
11	Coal Mining	Coal Reclaim from Run-of-Mine Pile	Fugitive	605,000 tpy	8,760 hr/yr
12	Coal Processing	Crusher	Fugitive	350 tph	1,815,000 tpy
13	Coal Processing	Transfer - Crusher to Conveyor 1	Fugitive	350 tph	1,815,000 tpy
14	Coal Processing	Transfer - Conveyor 1 to Raw Stockpile	Fugitive	350 tph	1,815,000 tpy
15	Coal Processing	Transfer - Raw Stockpile to Conveyor 2	Fugitive	350 tph	1,815,000 tpy
16	Coal Processing	Transfer - Conveyor 2 to Jig Plant	Fugitive	350 tph	1,815,000 tpy
17	Coal Processing	Transfer - Jig Plant to Conveyor 3	Fugitive	350 tph	815,000 tpy
18	Coal Processing	Transfer - Conveyor 3 to Reject Stockpile	Fugitive	350 tph	815,000 tpy
19	Coal Processing	Transfer - Jig Plant to Conveyor 4	Fugitive	350 tph	1,000,000 tpy
20	Coal Processing	Transfer - Conveyor 4 to Clean Stockpile	Fugitive	350 tph	1,000,000 tpy
21	Coal Processing	Transfer - Clean Stockpile to Conveyor 5	Fugitive	350 tph	1,000,000 tpy
22	Coal Processing	Transfer - Conveyor 5 to Loadout Bin	Fugitive	350 tph	1,000,000 tpy
23	Coal Processing	Transfer - Loadout Bin to Truck	Fugitive	350 tph	1,000,000 tpy
24	Wind Erosion	Mine Area	Fugitive	168 acres	8,760 hr/yr
25	Wind Erosion	Run-of-Mine Coal Stockpile	Fugitive	4 acres	8,760 hr/yr
26	Wind Erosion	Raw Coal Stockpile	Fugitive	1.5 acres	8,760 hr/yr
27	Wind Erosion	Clean Coal Stockpile	Fugitive	1.5 acres	8,760 hr/yr
28	Wind Erosion	Reject Stockpile	Fugitive	0.1 acres	8,760 hr/yr
29	Mobile Equipment	Grader Operations	Fugitive	13,122 VMT/yr	8,760 hr/yr
30	Mobile Equipment	Overburden Hauling - Backfill	Fugitive	19,340 VMT/yr	8,760 hr/yr
31	Mobile Equipment	Overburden Hauling - Stockpile	Fugitive	204,517 VMT/yr	8,760 hr/yr
32	Mobile Equipment	Coal Hauling within Mine	Fugitive	14,103 VMT/yr	8,760 hr/yr
33	Mobile Equipment	Misc. Mine Traffic	Fugitive	50,000 VMT/yr	8,760 hr/yr
34	Mobile Equipment	Other Vehicle Traffic	Fugitive	236,520 VMT/yr	8,760 hr/yr
35	Mobile Equipment	Coal Truck Haul - Loop Road	Fugitive	4,410 VMT/yr	8,760 hr/yr
36	Off-Source	Coal Truck Haul - Access Road	Fugitive	101,430 VMT/yr	8,760 hr/yr

Note:

[1]The number of actual blasts is expected to be lower than the number stated in this table and Table C-5. The numbers of blasts in Table C-5 is overstated to conservatively overestimate fugitive PM_{10} emissions.

Table C-2. Usibelli Coal Mine - Wishbone Hill Potential Emission Summary

ID	Classification	Description	Potential Emissions (tpy)				
			NO_x	CO	PM_{10}	VOC	SO_2
1	Power Generation	Diesel-fired Engine	61.3	7.8	0.8	0.6	0.04
2	Heaters	Diesel-fired Heaters	6.5	1.6	0.6	0.1	0.1
3	Topsoil Operations	Topsoil Removal to Storage	0.0	0.0	42.5	0.0	0.0
4	Blasting Operations	Overburden Blasting	0.0	0.0	1.0	0.0	0.0
5	Blasting Operations	Coal Blasting	0.0	0.0	0.5	0.0	0.0
6	Overburden	Overburden Truck Loading	0.0	0.0	5.3	0.0	0.0
7	Overburden	Overburden Dumping	0.0	0.0	5.3	0.0	0.0
8	Coal Mining	Coal Removal	0.0	0.0	16.1	0.0	0.0
9	Coal Mining	Coal Dumping - Crusher Feeder	0.0	0.0	16.1	0.0	0.0
10	Coal Mining	Coal Dumping - Run-of-Mine Pile	0.0	0.0	5.4	0.0	0.0
11	Coal Mining	Coal Reclaim from Run-of-Mine Pile	0.0	0.0	5.4	0.0	0.0
12	Coal Processing	Coal Crusher	0.0	0.0	2.2	0.0	0.0
13	Coal Processing	Transfer - Crusher to Conveyor 1	0.0	0.0	0.5	0.0	0.0
14	Coal Processing	Transfer - Conveyor 1 to Raw Stockpile	0.0	0.0	0.5	0.0	0.0
15	Coal Processing	Transfer - Raw Stockpile to Conveyor 2	0.0	0.0	0.5	0.0	0.0
16	Coal Processing	Transfer - Conveyor 2 to Jig Plant	0.0	0.0	0.5	0.0	0.0
17	Coal Processing	Transfer - Jig Plant to Conveyor 3	0.0	0.0	0.2	0.0	0.0
18	Coal Processing	Transfer - Conveyor 3 to Reject Stockpile	0.0	0.0	0.2	0.0	0.0
19	Coal Processing	Transfer - Jig Plant to Conveyor 4	0.0	0.0	0.2	0.0	0.0
20	Coal Processing	Transfer - Conveyor 4 to Clean Stockpile	0.0	0.0	0.2	0.0	0.0
21	Coal Processing	Transfer - Clean Stockpile to Conveyor 5	0.0	0.0	0.2	0.0	0.0
22	Coal Processing	Transfer - Conveyor 5 to Loadout Bin	0.0	0.0	0.2	0.0	0.0
23	Coal Processing	Transfer - Loadout Bin to Truck	0.0	0.0	0.2	0.0	0.0
24	Wind Erosion	Mine Area	0.0	0.0	63.8	0.0	0.0
25	Wind Erosion	Run-of-Mine Coal Stockpile	0.0	0.0	0.7	0.0	0.0
26	Wind Erosion	Raw Coal Stockpile	0.0	0.0	0.2	0.0	0.0
27	Wind Erosion	Clean Coal Stockpile	0.0	0.0	0.2	0.0	0.0
28	Wind Erosion	Reject Stockpile	0.0	0.0	0.02	0.0	0.0
29	Mobile Equipment	Grader Operations	0.0	0.0	5.0	0.0	0.0
30	Mobile Equipment	Overburden Hauling - Backfill	0.0	0.0	21.8	0.0	0.0
31	Mobile Equipment	Overburden Hauling - Stockpile	0.0	0.0	230.8	0.0	0.0
32	Mobile Equipment	Coal Hauling within Mine	0.0	0.0		0.0	0.0
33	Mobile Equipment	Misc. Mine Traffic	0.0	0.0	65.7	0.0	0.0
34	Mobile Equipment	Other Vehicle Traffic	0.0	0.0		0.0	0.0
35	Mobile Equipment	Coal Truck Haul - Loop Road	0.0	0.0	2.7	0.0	0.0
	Total Potential Emissions from Point Emission Units		67.8	9.3	1.4	0.7	0.1
	Total Potential Emissions from Fugitive Emission Units		0.0	0.0	494.4	0.0	0.0
	Total Potential Emissions from All Emission Units		67.8	9.3	495.8	0.7	0.1

Table C-3. Usibelli Coal Mine - Wishbone Hill Potential Emissions from Fuel-fired Emission Units

Table C-3.a. Diesel-fired Caterpillar C18 Engine (Emission Unit 1)

Pollutant	Maximum Capacity	Maximum Operation	Emission Factor		Potential Emissions
				Reference	
NO_X	900 hp	8,760 hr/yr	14.0 lb/hr	Vendor Data	61.3 tpy
CO	900 hp	8,760 hr/yr	1.77 lb/hr	Vendor Data	7.8 tpy
PM_{10}	900 hp	8,760 hr/yr	0.18 lb/hr	Vendor Data	0.8 tpy
VOC	900 hp	8,760 hr/yr	0.14 lb/hr	Vendor Data	0.6 tpy
SO_2	900 hp	8,760 hr/yr	15 ppmw	Mass Balance	0.04 tpy

Table C-3.b. Diesel-fired Heaters and Boilers (Emission Unit 2)

Pollutant	Maximum Capacity	Maximum Operation	Emission Factor		Potential Emissions
			Value	Reference	
NO_X	10.0 MMBtu/hr	8,760 hr/yr	20 lb/1,000 gal	AP-42 Table 1.3-1	6.5 tpy
CO	10.0 MMBtu/hr	8,760 hr/yr	0.036 lb/MMBtu	AP-42 Table 1.3-1	1.6 tpy
PM_{10}	10.0 MMBtu/hr	8,760 hr/yr	2 lb/1,000 gal	AP-42 Table 1.3-1	0.6 tpy
VOC	10.0 MMBtu/hr	8,760 hr/yr	0.002 lb/MMBtu	AP-42 Table 1.3-3	0.1 tpy
SO_2	10.0 MMBtu/hr	8,760 hr/yr	15 ppmw	Mass Balance	0.07 tpy

Notes: 1. Fuel consumption is assumed to be 74 gallons per hour.

Table C-4. Usibelli Coal Mine - Wishbone Hill Potential PM_{10} Emissions from Topsoil Removal to Storage

Emission Unit		Expected	Emission Reduction for	Emission Factor		Potential
ID	Description	Operation	Water Application	Value	Reference	PM_{10} Emissions
3	Topsoil Removal to Storage	2,660 hr/yr	0 percent	32.0 lb/hr	AP-42, Table 11-9.1	42.5 tpy
					Total Potential PM_{10} Emissions	42.5 tpy

Notes:
1. Topsoil is removed and piled for storage using bulldozers.
2. Topsoil silt content is 65 percent.
3. Topsoil moisture content is 6 percent.

Table C-5. Usibelli Coal Mine - Wishbone Hill Potential PM_{10} Emissions from Blasting Operations

Emission Unit		Capacity	Expected	Emission Factor		Potential
ID	Description		Operation	Value	Reference	PM_{10} Emissions
4	Overburden Blasting	10,890 ft^2/blast	240 blast/yr	8.27 lb/blast	AP-42, Table 11.9-1	0.99 tpy
5	Coal Blasting	10,890 ft^2/blast	120 blast/yr	8.27 lb/blast	AP-42, Table 11.9-1	0.50 tpy
				Total Potential PM_{10} Emission		1.5 tpy

Note: The number of actual blasts is expected to be lower than the number stated in Table C-5. The numbers of blasts in Table C-5 is overstated to conservatively overestimate fugitive PM_{10} emissions.

Table C-6. Usibelli Coal Mine - Wishbone Hill Potential PM_{10} Emissions from Overburden Removal Operations

Emission Unit		Expected	Emission Factor		Potential
ID	Description	Operation	Value	Reference	PM_{10} Emissions
6	Overburden Truck Loading	10,306,000 tpy	0.00103266 lb/ton	AP-42, Section 13.2.4, Eq. 1	5.3 tpy
7	Overburden Dumping	10,306,000 tpy	0.00103266 lb/ton	AP-42, Section 13.2.4, Eq. 1	5.3 tpy
				Total Potential PM_{10} Emission	10.6 tpy

Notes: 1. Average annual wind speed is 4.36 miles per hour.
2. Overburden moisture content is 4 percent.
3. Frequency of loading and dumping operations: 30 days per year

Table C-7. Usibelli Coal Mine - Wishbone Hill Potential PM_{10} Emissions from Coal Mining Operations

Emission Unit		Expected	Emission Factor		Potential
ID	Description	Operation	Value	Reference	PM_{10} Emissions
8	Coal Truck Loading	1,815,000 tpy	0.0178 lb/ton	AP-42, Table 11.9-1	16.1 tpy
9	Coal Dumping - Crusher Feeder	1,815,000 tpy	0.0178 lb/ton	AP-42, Table 11.9-1	16.1 tpy
10	Coal Dumping - Run-of-Mine Pile	605,000 tpy	0.0178 lb/ton	AP-42, Table 11.9-1	5.4 tpy
11	Coal Reclaim - Run-of-Mine Pile	605,000 tpy	0.0178 lb/ton	AP-42, Table 11.9-1	5.4 tpy
				Total Potential PM_{10} Emission	43.1 tpy

Notes: 1. Run-of-mine coal moisture content is 6 percent.
2. Frequency of coal mining operations: 365 days per year

Table C-8. Usibelli Coal Mine - Wishbone Hill Potential PM_{10} Emissions from Coal Processing Operations

Emission Unit		Expected	Emission Factor		Potential
ID	Description	Operation	Value	Reference	PM_{10} Emissions
12	Coal Crusher	1,815,000 tpy	0.0024 lb/ton	AP-42, Table 11.19.2-2	2.2 tpy
13	Transfer - Crusher to Conveyor 1	1,815,000 tpy	0.00058537 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.5 tpy
14	Transfer - Conveyor 1 to Raw Stockpile	1,815,000 tpy	0.00058537 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.5 tpy
15	Transfer - Raw Stockpile to Conveyor 2	1,815,000 tpy	0.00058537 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.5 tpy
16	Transfer - Conveyor 2 to Jig Plant	1,815,000 tpy	0.00058537 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.5 tpy
17	Transfer - Jig Plant to Conveyor 3	815,000 tpy	0.00039131 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.2 tpy
18	Transfer - Conveyor 3 to Reject Stockpile	815,000 tpy	0.00039131 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.2 tpy
19	Transfer - Jig Plant to Conveyor 4	1,000,000 tpy	0.00039131 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.2 tpy
20	Transfer - Conveyor 4 to Clean Stockpile	1,000,000 tpy	0.00039131 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.2 tpy
21	Transfer - Clean Stockpile to Conveyor 5	1,000,000 tpy	0.00039131 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.2 tpy
22	Transfer - Conveyor 5 to Loadout Bin	1,000,000 tpy	0.00039131 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.2 tpy
23	Transfer - Loadout Bin to Truck	1,000,000 tpy	0.00039131 lb/ton	AP-42, Section 13.2.4, Eq. 1	0.2 tpy
				Total Potential PM_{10} Emission	5.6 tpy

Notes: 1. Average annual wind speed is 4.36 miles per hour.
2. Run-of-mine coal moisture content is 6 percent.
3. Clean coal moisture content is 8 percent.
2. Frequency of coal processing operations: 365 days per year

Table C-9. Usibelli Coal Mine - Wishbone Hill Potential PM_{10} Emissions from Wind Erosion

Emission Unit		Expected	Emission Factor		Potential
ID	Description	Operation	Value	Reference	PM_{10} Emissions
24	Mine Area	168 acres	0.38 ton/acre/yr	AP-42, Table 11.9-4	63.8 tpy
25	Run-of-Mine Coal Stockpile	4 acres	36.6 $g/m^2/yr$	AP-42, Section 13.2.5, Eq. 3	0.7 tpy
26	Raw Coal Stockpile	1.5 acres	36.6 $g/m^2/yr$	AP-42, Section 13.2.5, Eq. 3	0.2 tpy
27	Clean Coal Stockpile	1.5 acres	36.6 $g/m^2/yr$	AP-42, Section 13.2.5, Eq. 3	0.2 tpy
28	Reject Stockpile	0.1 acres	36.6 $g/m^2/yr$	AP-42, Section 13.2.5, Eq. 3	0.02 tpy
				Total Potential PM_{10} Emission	65.0 tpy

Notes:
1. Average annual wind speed is 4.36 miles per hour.
2. Fastest mile of wind of 50 miles per hour (22.36 meters per second) is assumed to occur 36 days per year.

Table C-10. Usibelli Coal Mine - Wishbone Hill Potential PM_{10} Emissions from Mobile Equipment Operations

Emission Unit		Expected Operation	Emission Factor		Emission Reduction for	Potential
ID	Description		Value	Reference	Water Application	PM_{10} Emissions
29	Grader Operations	13,122 VMT/yr	0.765 lb/VMT	AP-42, Table 11.9.1	0 percent	5.0 tpy
30	Overburden Hauling - Backfill	19,340 VMT/yr	4.52 lb/VMT	AP-42, Section 13.2.2, Eq. 1a	50 percent	21.8 tpy
31	Overburden Hauling - Stockpile	204,517 VMT/yr	4.52 lb/VMT	AP-42, Section 13.2.2, Eq. 1a	50 percent	230.8 tpy
32	Coal Hauling within Mine	14,103 VMT/yr	0.874 lb/VMT	AP-42, Section 13.2.2, Eq. 1a	50 percent	65.7 tpy
33	Misc. Mine Traffic	50,000 VMT/yr				
34	Other Vehicle Traffic	236,520 VMT/yr				
35	Coal Hauling - Loop Road	4,410 VMT/yr	2.42 lb/VMT	AP-42, Section 13.2.2, Eq. 1a	50 percent	2.7 tpy
				Total Potential PM_{10} Emission		326.1 tpy

Notes:
1. Average speed of grader is 5 miles per hour.
2. Road surface material silt content is 5 percent.
3. Average weight of overburden haul truck is 200 tons.
4. Average weight of coal haul truck is 50 tons.
5. Average weight of miscellaneous mine traffic and other vehicle traffic is 3 tons.
6. Frequency of mobile equipment operations: 365 days per year

Table C-11. Usibelli Coal Mine - Wishbone Hill Potential PM_{10} Emissions from Haul Trucks on Mine Access Road

Emission Unit ID	Emission Unit Description	Expected Operation	Emission Factor Value	Emission Factor Reference	Emission Reduction for Water Application	Potential PM_{10} Emissions
36	Coal Hauling - Mine Access Road	101,430 VMT/yr	2.420 lb/VMT	AP-42, Section 13.2.2, Eq. 1a	50 percent	61.4 tpy
				Total Potential PM_{10} Emission		61.4 tpy

Notes:
1. Average weight of coal haul truck is 50 tons.
2. Road surface material silt content is 5 percent.
3. Frequency of mine access road use: 365 days per year

Table C-12. Usibelli Coal Mine - Wishbone Hill Modeled Emissions Summary

ID	Classification	Description	Modeled Emissions (g/s)		
			Annual NO_X	Annual PM_{10}	24-Hour PM_{10}
1	Power Generation	Diesel-fired Engine	1.77	0.023	0.023
2	Heaters	Diesel-fired Heaters	0.19	0.019	0.019
3	Topsoil Operations	Topsoil Removal to Storage	0.0	1.23	4.03
4	Blasting Operations	Overburden Blasting	0.0	0.0286	0.435
5	Blasting Operations	Coal Blasting	0.0	0.0143	0.435
6	Overburden	Overburden Truck Loading	0.0	0.153	1.86
7	Overburden	Overburden Dumping	0.0	0.153	1.86
8	Coal Mining	Coal Removal	0.0	0.465	0.465
9	Coal Mining	Coal Dumping - Crusher Feeder	0.0	0.465	0.465
10	Coal Mining	Coal Dumping - Run-of-Mine Pile	0.0	0.155	0.155
11	Coal Mining	Coal Reclaim from Run-of-Mine Pile	0.0	0.155	0.155
12	Coal Processing	Crusher	0.0	0.063	0.063
13	Coal Processing	Transfer - Crusher to Conveyor 1	0.0	0.015	0.015
14	Coal Processing	Transfer - Conveyor 1 to Raw Stockpile	0.0	0.015	0.015
15	Coal Processing	Transfer - Raw Stockpile to Conveyor 2	0.0	0.015	0.015
16	Coal Processing	Transfer - Conveyor 2 to Jig Plant	0.0	0.015	0.015
17	Coal Processing	Transfer - Jig Plant to Conveyor 3	0.0	0.005	0.005
18	Coal Processing	Transfer - Conveyor 3 to Reject Stockpile	0.0	0.005	0.005
19	Coal Processing	Transfer - Jig Plant to Conveyor 4	0.0	0.006	0.006
20	Coal Processing	Transfer - Conveyor 4 to Clean Stockpile	0.0	0.006	0.006
21	Coal Processing	Transfer - Clean Stockpile to Conveyor 5	0.0	0.006	0.006
22	Coal Processing	Transfer - Conveyor 5 to Loadout Bin	0.0	0.006	0.006
23	Coal Processing	Transfer - Loadout Bin to Truck	0.0	0.006	0.006
24	Wind Erosion	Mine Area	0.0	1.8381	1.8381
25	Wind Erosion	Run-of-Mine Coal Stockpile	0.0	0.019	0.019
26	Wind Erosion	Raw Coal Stockpile	0.0	0.007	0.007
27	Wind Erosion	Clean Coal Stockpile	0.0	0.007	0.007
28	Wind Erosion	Reject Stockpile	0.0	0.000	0.000
29	Mobile Equipment	Grader Operations	0.0	0.14	0.14
30	Mobile Equipment	Overburden Hauling - Backfill	0.0	0.63	0.63
31	Mobile Equipment	Overburden Hauling - Stockpile	0.0	6.65	6.65
32	Mobile Equipment	Coal Hauling within Mine	0.0	1.89	1.89
33	Mobile Equipment	Misc. Mine Traffic	0.0		
34	Mobile Equipment	Other Vehicle Traffic	0.0		
35	Mobile Equipment	Coal Truck Haul - Loop Road	0.0	0.077	0.08
36	Off-Source	Coal Truck Haul - Access Road	0.0	1.77	1.77

Attachment D

Demonstration of Compliance with 18 AAC 50.055

DEMONSTRATION OF COMPLIANCE WITH 18 AAC 50.055

(Emission Standard – Particulate Loading of 0.05 gr/scf)

Emission Unit 1: Caterpillar C-18 Diesel-fired Engine

- From vendor data, PM emission factor = 0.18 lb/hr

- From vendor data, exhaust gas flow rate = 1,584 scfm

  Emission Rate = 0.18 lb/hr x 7,000 gr/lb = 1,260 gr/hr
  Concentration = 1,260 gr/hr / (1,584 scf/min x 60 min/hr) = 0.01 gr/scf

Emission Unit 2: Diesel-fired Heaters

- From AP-42, Table 1.3-1, PM emission factor = 2 lb/1,000 gal

  Converting emission factor assuming 135,000 Btu/gal,
  PM emission factor = 2 lb/1,000 gal/0.135 MMBtu/gal = 0.015 lb/MMBtu

- From 40 CFR 60, Method 19,

  $E = CF[20.9/(20.9-O_2)]$

  where: E = pollutant emission rate (lb/MMBtu)
  C = pollutant concentration in stack gas (lb/scf)
  F = F-factor (scf/MMBtu)
  O_2 = % oxygen in stack gas

- Solving for C, converting to gr/scf

  where: E = 0.015 lb/MMBtu
  F = 9,190 scf/MMBtu (factor for diesel combustion)
  O_2 = 0% (conservative; some excess air required for good combustion; not dilution of stack gas)

  C = 0.015/9,190/[20.9/(20.9-0)] = 1.6E-6 lb/scf

  C = 0.01 gr/scf

- Assumptions/Comments

  Based on the level of particulate matter emissions above, the emission units will comply with the 20 percent visible emission standard under 18 AAC 50.055(a)(1).

DEMONSTRATION OF COMPLIANCE WITH 18 AAC 50.055

(Emission Standard – 500 ppm SO_2 Stack Gas Concentration)

Diesel-fired Emission Units 1 and 2

- From 40 CFR 60, Method 19,

  F-factor for diesel fuel = 9,190 scf/MMBtu
  1 ppm SO_2 = 1.660E-7 lb SO_2/scf (conversion factor)

- Converting ppm SO_2 in stack gas to wt. pct. S in fuel

  (500 ppmv SO_2)(1.667E-7) = 8.3E-5 lb SO_2/scf

  (8.3E-5 lb SO_2/scf)(9,190 scf/MMBtu fuel)(0.0193 MMBtu/lb fuel)

  = 1.48E-2 lb SO_2/lb fuel

  (1.48E-2 lb SO_2/lb fuel)(mole SO_2/64 lb SO_2)(mole S/mole SO_2)(32 lb S/mole S)

  = 0.0074 lb S/lb fuel

  = 0.74 wt. pct S

- Therefore, if fuel sulfur is less than 0.74 wt. pct., the resulting SO_2 stack concentration is less than 500 ppm. The stationary source will use ULSD exclusively, and will comply with the standard.

- Assumptions/Comments

  Calculation conservatively assumes that no excess air is present in stack gas even though diesel-fired equipment is operated with excess air (measured as O_2) in the stack gas as a requirement for good combustion.

Attachment E

Caterpillar Engine Specifications

Gen Set Package Performance Data [C18DE97]

October 26, 2007

For Help Desk Phone Numbers Click here

Performance Number: DM8518

Change Level: 00

Sales Model: C18 DITA
Combustion: DI
Aspr: TA
Engine Power: 600 W/F EKW 622 W/O F EKW 900 HP
Speed: 1,800 RPM
After Cooler: ATAAC
Manifold Type: DRY
Governor Type: ELEC
After Cooler Temp(F): 120
Turbo Quantity: 2
Engine App: GP
Turbo Arrangement:
Hertz: 60
Engine Rating: PGS
Strategy:
Rating Type: STANDBY
Certification: EPA TIER-2 2006 - ----

General Performance Data 1

GEN W/F EKW	PERCENT LOAD	ENGINE POWER BHP	ENGINE BMEP PSI	FUEL RATE LB/ BHP-HR	FUEL RATE GPH	INTAKE MFLD TEMP DEG F	INTAKE MFLD P IN-HG	INTAKE AIR FLOW CFM	EXH MFLD TEMP DEG F	EXH STACK TEMP DEG F	EXH GAS FLOW CFM
600.0	100	900	358	0.332	42.7	120.2	69.4	1,673.9	1,296.3	994.3	4,781.6
540.0	90	808	322	0.339	39.1	118.8	66.3	1,628.0	1,245.6	957.7	4,527.3
480.0	80	718	286	0.350	35.9	114.4	63.5	1,596.2	1,207.0	930.7	4,347.2
450.0	75	674	268	0.356	34.3	112.8	61.9	1,575.0	1,187.2	917.1	4,244.8
420.0	70	629	250	0.361	32.4	111.6	59.7	1,543.3	1,164.9	902.7	4,103.6
360.0	60	541	215	0.369	28.5	109.2	53.8	1,447.9	1,112.0	870.4	3,757.5
300.0	50	455	181	0.373	24.2	106.7	45.7	1,313.7	1,046.3	833.0	3,305.5
240.0	40	371	148	0.367	19.5	100.4	33.2	1,098.3	946.0	779.2	2,669.8
180.0	30	287	114	0.358	14.7	94.1	20.5	879.3	836.1	713.3	2,027.1
150.0	25	244	97	0.351	12.2	90.9	14.1	769.9	777.0	675.5	1,702.2
120.0	20	201	80	0.354	10.1	93.2	9.7	688.6	717.3	634.5	1,455.0
60.0	10	113	45	0.413	6.7	110.5	5.3	593.3	593.1	542.8	1,144.2

General Performance Data 2

GEN W/F EKW	PERCENT LOAD	ENGINE POWER BHP	COMPRESS OUT PRESS KPA	COMPRESS OUT TEMP DEG F
600.0	100	900	254	412.3
540.0	90	808	242	394.7
480.0	80	718	233	382.3
450.0	75	674	227	375.6
420.0	70	629	219	366.6
360.0	60	541	198	343.2
300.0	50	455	169	310.5
240.0	40	371	125	255.6
180.0	30	287	80	199.8

150.0	25	244	57	171.5
120.0	20	201	41	151.0
60.0	10	113	25	126.7

Heat Rejection Data

GEN W/F EKW	PERCENT LOAD	REJ TO JW BTU/ MN	REJ TO ATMOS BTU/MN	REJ TO EXHAUST BTU/MN	EXH RCOV TO 350F BTU/ MN	FROM OIL CLR BTU/MN	FROM AFT CLR BTU/MN	WORK ENERGY BTU/MN	LHV ENERGY BTU/MN	HHV ENERGY BTU/MN
600.0	100	10,748.0	6,768.0	34,691.0	20,303.0	4,931.0	8,246.0	38,160.0	92,527.0	98,556.0
540.0	90	9,782.0	6,369.0	32,075.0	18,483.0	4,498.0	7,564.0	34,293.0	84,509.0	90,025.0
480.0	80	8,985.0	5,858.0	30,084.0	17,175.0	4,129.0	7,222.0	30,482.0	77,571.0	82,632.0
450.0	75	8,587.0	5,516.0	29,061.0	16,549.0	3,941.0	6,995.0	28,549.0	73,931.0	78,765.0
420.0	70	8,189.0	5,232.0	27,809.0	15,696.0	3,725.0	6,654.0	26,672.0	69,950.0	74,556.0
360.0	60	7,279.0	4,720.0	24,852.0	13,819.0	3,276.0	5,744.0	22,975.0	61,476.0	65,514.0
300.0	50	6,313.0	4,208.0	21,269.0	11,545.0	2,781.0	4,493.0	19,279.0	52,150.0	55,562.0
240.0	40	5,516.0	4,038.0	16,492.0	8,530.0	2,235.0	2,900.0	15,753.0	41,970.0	44,700.0
180.0	30	4,720.0	3,185.0	11,943.0	5,744.0	1,683.0	1,592.0	12,170.0	31,563.0	33,610.0
150.0	25	4,322.0	2,445.0	9,838.0	4,493.0	1,399.0	1,024.0	10,350.0	26,274.0	28,037.0
120.0	20	3,867.0	2,047.0	8,132.0	3,469.0	1,160.0	682.0	8,530.0	21,781.0	23,203.0
60.0	10	2,843.0	1,763.0	5,630.0	1,990.0	762.0	171.0	4,777.0	14,331.0	15,298.0

EMISSIONS DATA

EPA TIER-2 2006 - ---- ********** B5

Gaseous emissions data measurements are consistent with those described in
EPA 40 CFR PART 89 SUBPART D and ISO 8178 for measuring HC, CO, PM, and NOx

Gaseous emissions values are WEIGHTED CYCLE AVERAGES and are in compliance
with the following non-road regulations:

LOCALITY	AGENCY/LEVEL	MAX LIMITS - g/kW-hr		
U.S. (incl Calif)	EPA/TIER-2	CO:3.5	NOx + HC:6.4	PM:0.2

EXHAUST STACK DIAMETER	--
WET EXHAUST MASS	7,707.4 LB/HR
WET EXHAUST FLOW (993.20 F STACK TEMP)	4,785.14 CFM
WET EXHAUST FLOW RATE (32 DEG F AND 29.98 IN HG)	1,584.00 STD CFM
DRY EXHAUST FLOW RATE (32 DEG F AND 29.98 IN HG)	1,450.73 STD CFM
FUEL FLOW RATE	43 GAL/HR

RATED SPEED "Not to exceed data"

GEN PWR EKW	PERCENT LOAD	ENGINE POWER BHP	TOTAL NOX (AS NO2) LB/ HR	TOTAL CO LB/ HR	TOTAL HC LB/ HR	PART MATTER LB/HR	OXYGEN IN EXHAUST PERCENT
600.0	100	900	14.0100	1.7700	.0300	.1300	8.9000
450.0	75	674	6.1000	1.2700	.0600	.1800	10.8000
300.0	50	455	3.3800	.4700	.1400	.1000	12.4000
150.0	25	244	4.3600	.5000	.0800	.0400	13.7000
60.0	10	113	2.8600	.7900	.0800	.0400	15.8000

RATED SPEED "Nominal Data"

GEN PWR EKW	PERCENT LOAD	ENGINE POWER BHP	TOTAL NOX (AS NO2) LB/ HR	TOTAL CO LB/ HR	TOTAL HC LB/ HR	TOTAL CO2 LB/ HR	PART MATTER LB/HR	OXYGEN IN EXHAUST PERCENT
600.0	100	900	11.5800	.9500	.0200	939.8	.0700	8.9000
450.0	75	674	5.0400	.6800	.0300	748.9	.0900	10.8000
300.0	50	455	2.7900	.2500	.0800	530.1	.0500	12.4000
150.0	25	244	3.6100	.2700	.0400	270.9	.0200	13.7000
60.0	10	113	2.3600	.4200	.0400	148.2	.0200	15.8000

Altitude Capability Data(Corrected Power Altitude Capability)

Ambient Operating Temp. / Altitude	50 F	68 F	86 F	104 F	122 F	NORMAL
0 F	900 hp	900 hp	900 hp	900 hp	900 hp	900 hp
984 F	900 hp	900 hp	900 hp	900 hp	890 hp	900 hp
1,640 F	900 hp	900 hp	900 hp	897 hp	870 hp	900 hp
3,281 F	900 hp	900 hp	873 hp	845 hp	819 hp	890 hp
4,921 F	880 hp	849 hp	821 hp	795 hp	771 hp	848 hp
6,562 F	826 hp	798 hp	772 hp	747 hp	724 hp	806 hp
8,202 F	776 hp	750 hp	725 hp	703 hp	680 hp	766 hp
9,843 F	730 hp	704 hp	681 hp	660 hp	638 hp	727 hp
11,483 F	684 hp	661 hp	638 hp	618 hp	599 hp	689 hp
13,123 F	641 hp	620 hp	599 hp	579 hp	562 hp	654 hp
14,764 F	601 hp	581 hp	561 hp	543 hp	526 hp	620 hp

The powers listed above and all the Powers displayed are Corrected Powers

Identification Reference and Notes

Engine Arrangement:	2726915	**Lube Oil Press @ Rated Spd(PSI):**	69.6
Effective Serial No:	EST00001	**Piston Speed @ Rated Eng SPD(FT/Min):**	2,165.4
Primary Engine Test Spec:	0K7257	**Max Operating Altitude(FT):**	2,952.8
Performance Parm Ref:	TM5739	**PEEC Elect Control Module Ref**	
Performance Data Ref:	DM8518	**PEEC Personality Cont Mod Ref**	
Aux Coolant Pump Perf Ref:			
Cooling System Perf Ref:		**Turbocharger Model**	S310S089
Certification Ref:	EPA TIER 2	**Fuel Injector**	
Certification Year:	2006	**Timing-Static (DEG):**	--
Compression Ratio:	14.5	**Timing-Static Advance (DEG):**	--
Combustion System:	DI	**Timing-Static (MM):**	--
Aftercooler Temperature (F):	120	**Unit Injector Timing (MM):**	--
Crankcase Blowby Rate(CFH):	--	**Torque Rise (percent)**	--
Fuel Rate (Rated RPM) No Load(Gal/HR):	--	**Peak Torque Speed RPM**	--
Lube Oil Press @ Low Idle Spd(PSI):	55.1	**Peak Torque (LB/FT):**	--

Reference Number: DM8518

CORE ARRANGEMENT: 2726916
EPA TIER-2 2006----B5

Parameters Reference: TM5739

GEN SET - PACKAGED - DIESEL
TOLERANCES:
AMBIENT AIR CONDITIONS AND FUEL USED WILL AFFECT THESE VALUES. EACH OF THE VALUES MAY VARY IN ACCORDANCE WITH THE FOLLOWING TOLERANCES.

ENGINE POWER	+/- 3%
EXHAUST STACK TEMPERATURE	+/- 8%
GENERATOR POWER	+/- 5%
INLET AIR FLOW	+/- 5%
INTAKE MANIFOLD PRESSURE - GAGE	+/- 10%
EXHAUST FLOW	+/- 6%
SPECIFIC FUEL CONSUMPTION	+/- 3%
FUEL RATE	+/- 5%
HEAT REJECTION	+/- 5%
HEAT REJECTION EXHAUST ONLY	+/- 10%

CONDITIONS:
ENGINE PERFORMANCE IS CORRECTED TO INLET AIR STANDARD CONDITIONS OF 99 KPA (29.31 IN HG) AND 25 DEG C (77 DEG F).

THESE VALUES CORRESPOND TO THE STANDARD ATMOSPHERIC PRESSURE AND
TEMPERATURE IN ACCORDANCE WITH SAE J1995. ALSO INCLUDED IS A CORRECTION TO STANDARD FUEL GRAVITY OF 35 DEGREES API HAVING A LOWER HEATING VALUE OF 42,780 KJ/KG (18,390 BTU/LB) WHEN USED AT 29 DEG C (84.2 DEG F) WHERE THE DENSITY IS 838.9 G/L (7.002 LB/GAL).

THE CORRECTED PERFORMANCE VALUES SHOWN FOR CATERPILLAR ENGINES WILL
APPROXIMATE THE VALUES OBTAINED WHEN THE OBSERVED PERFORMANCE DATA IS CORRECTED TO SAE J1995, ISO 3046-2 & 8665 & 2288 & 9249 & 1585, EEC 80/1269 AND DIN70020 STANDARD REFERENCE CONDITIONS.

ENGINES ARE EQUIPPED WITH STANDARD ACCESSORIES; LUBE OIL, FUEL PUMP AND JACKET WATER PUMP. THE POWER REQUIRED TO DRIVE AUXILIARIES MUST BE DEDUCTED FROM THE GROSS OUTPUT TO ARRIVE AT THE NET POWER AVAILABLE FOR THE EXTERNAL (FLYWHEEL) LOAD. TYPICAL AUXILIARIES INCLUDE COOLING FANS, AIR COMPRESSORS, AND CHARGING ALTERNATORS.

RATINGS MUST BE REDUCED TO COMPENSATE FOR ALTITUDE AND/OR AMBIENT TEMPERATURE CONDITIONS ACCORDING TO THE APPLICABLE DATA SHOWN ON
THE PERFORMANCE DATA SET.

GEN SET - PACKAGED - DIESEL
ALTITUDE:
ALTITUDE CAPABILITY - THE RECOMMENDED REDUCED POWER VALUES FOR SUSTAINED ENGINE OPERATION AT SPECIFIC ALTITUDE LEVELS AND AMBIENT TEMPERATURES.

COLUMN "N" DATA - THE FLYWHEEL POWER OUTPUT AT NORMAL AMBIENT TEMPERATURE.

AMBIENT TEMPERATURE - TO BE MEASURED AT THE AIR CLEANER AIR INLET DURING NORMAL ENGINE OPERATION.
NORMAL TEMPERATURE - THE NORMAL TEMPERATURE AT VARIOUS SPECIFIC ALTITUDE LEVELS IS FOUND ON TM2001.

THE GENERATOR POWER CURVE TABULAR DATA REPRESENTS THE NET ELECTRICAL POWER OUTPUT OF THE GENERATOR.

GENERATOR SET RATINGS
EMERGENCY STANDBY POWER (ESP)

OUTPUT AVAILABLE WITH VARYING LOAD FOR THE DURATION OF AN EMERGENCY
OUTAGE. AVERAGE POWER OUTPUT IS 70% OF THE ESP RATING. TYPICAL OPERATION IS 50 HOURS PER YEAR, WITH MAXIMUM EXPECTED USAGE OF 200 HOURS PER YEAR.

STANDBY POWER RATING

OUTPUT AVAILABLE WITH VARYING LOAD FOR THE DURATION OF AN EMERGENCY
OUTAGE. AVERAGE POWER OUTPUT IS 70% OF THE STANDBY POWER RATING. TYPICAL OPERATION IS 200 HOURS PER YEAR, WITH MAXIMUM EXPECTED USAGE OF 500 HOURS PER YEAR.

PRIME POWER RATING

OUTPUT AVAILABLE WITH VARYING LOAD FOR AN UNLIMITED TIME. AVERAGE POWER OUTPUT IS 70% OF THE PRIME POWER RATING. TYPICAL PEAK DEMAND IS 100% OF PRIME RATED EKW WITH 10% OVERLOAD CAPABILITY FOR EMERGENCY
USE FOR A MAXIMUM OF 1 HOUR IN 12. OVERLOAD OPERATION CANNOT EXCEED 25 HOURS PER YEAR.

CONTINUOUS POWER RATING

OUTPUT AVAILABLE WITH NON-VARYING LOAD FOR AN UNLIMITED TIME. AVERAGE POWER OUTPUT IS 70-100% OF THE CONTINUOUS POWER RATING. TYPICAL PEAK DEMAND IS 100% OF CONTINUOUS RATED EKW FOR 100% OF OPERATING HOURS.

Attachment F

Ambient Air Quality Analysis

Usibelli Coal Mine, Inc.
Wishbone Hill – Air Quality Impacts Assessment

Summary

Usibelli Coal Mine, Inc. (Usibelli) is planning to operate a coal mining and processing facility located northeast of Palmer, Alaska. The operation will include equipment and methods which will introduce regulated air pollutants into the atmosphere in sufficient quantities to trigger a requirement to obtain an air quality construction permit from the Alaska Department of Environmental Conservation (ADEC). As an element of the permit application, Usibelli must demonstrate that emissions associated with the planned activities will not interfere with maintenance of the Alaska Ambient Air Quality Standards (AAAQS).

This demonstration of compliance with the AAAQS has been completed using dispersion modeling techniques and approved models. The compliance demonstration used the EPA-approved AERMOD model (version 09292) along with the suite of associated programs (AERMET and AERMAP) to model the planned activities associated with the Wishbone Hill operation. These activities include mining, processing, and hauling operations which are supported by both fixed and mobile emission units that emit products of combustion and/or generate fugitive dust (particulate) emissions. Because of the variety of activities, a representative emission activity profile has been used to establish compliance.

The results of the modeling demonstrate that the planned mining activities will not adversely affect ambient air quality in the vicinity of the operations.

Modeling Methodology

Mining, processing and cleaning of coal requires a number of related activities including preparation of the mine area, retrieval of the coal, processing and cleaning the coal, and hauling the cleaned coal offsite. Many of these processes require interaction with soils/rock such as topsoil removal and blasting as well as scraping and hauling/dumping, all which disturb dirt/rock and can generate fugitive dust. Processing mined material and the associated power requirements are accommodated by diesel-fired heaters and generators which emit combustion byproducts to the atmosphere. The combination of these emission unit types and overlapping operations makes modeling of mining activities non-standard vis-a-vis more typical industrial processes.

To account for the various mining activities, an overall emission unit inventory is developed to calculate activity level emission rates. Not all activities can occur at the same time due to safety precautions (e.g., blasting) or limitations in equipment availability or activity sequencing. Modeling a complete inventory as if all activities

happened simultaneously for short-term (i.e., daily) compliance, would overstate the ambient impact. Therefore, a reasonable emission profile is typically developed to simulate a number of overlapping activities.

The emission unit inventory used to support this modeling assessment is provided in Table F-1.

Total emission rates associated with the mining operations are predominantly fugitive derived particulate matter (PM_{10}) emissions. The bulk of these emissions are associated with overburden hauling, mine traffic, and topsoil removal.

Open mining is inherently a sequential operation during which access to mined material is gained by exposing the material through blasting and the removal of overburden. Because of safety considerations and scheduling, these activities may not be conducted at the same time or during the same 24-hour period.

Because some of the AAAQS averaging periods are of shorter duration (hourly or daily), not all mining activities will occur during a 24-hour period. Nonetheless, a representative mining emission profile can be developed to determine modeled impacts to ambient air resulting from many of these activities as if occurring simultaneously. For comparative purposes, the potential emissions for all emission units in the inventory (if all emission units were operating simultaneously) for PM_{10} is about 21 grams per second (g/s), excluding wind erosion. The modeled representative activity level is about 15 g/s corresponding with a continuous overlapping daily mining activity level.

The primary differences in total potential emissions and the short-term modeled representative mining activity level are for the emissions associated with topsoil removal, overburden truck loading, and overburden dumping. Topsoil removal occurs about one-third of the time [(2,660 hours per year (hr/yr)]. Overburden and topsoil removal will not occur simultaneously. Therefore, the simulation of topsoil removal along with concurrent activity was set to reflect the more intermittent nature of the removal activity in relation to other mining operations. The maximum short-term potential PM emission rate due to topsoil removal is 4.03 g/s assuming full 24-hour per day 365 day per year activity, whereas the annual rate assuming 2,660 hours of operation per year is 1.23 g/s. The difference in rates is 2.8 g/s.

As with topsoil removal, overburden truck loading and overburden dumping are activities that occur intermittently. These activities are part of the overburden removal, transport, and storage portion of the mining operations. Both overburden loading and dumping are expected to occur no more than 30 days per year. The overburden hauling emissions will occur in the areas of overburden loading and dumping. Therefore, the overburden hauling emissions adequately account for the intermittent loading and dumping activities

because hauling is simulated as if continuous. Excluding the maximum short-term potential PM emissions rates due to overburden loading and dumping accounts for 3.72 g/s.

The potential emissions from these intermittent activities (topsoil removal and overburden truck loading and dumping) are assumed to occur continuously and therefore overstate the contributions of these activities to a representative mining emission profile. As a result, these activities were either modeled at a rate reflecting the intermittent nature of the activity or addressed through simulation of a related activity.

Modeling for the point source emission units shown in Table F-1 was completed by locating the emission units within the mine boundary and applying characteristic exhaust parameters for those types of units (diesel-fired generators and diesel-fired heaters).

Modeling for the fugitive emission units was done using a variety of open pit and volume source characterizations. The mine access and haul road was modeled as a series of spaced volume sources along the length of the road.

Unlike the standard exhaust parameters associated with point source type emission units (height, temperature, exit velocity, exit diameter), the exhaust parameters associated with fugitive type emissions as characterized by volume sources include initial lateral and vertical dispersion parameters as descriptors of the size of the volume source. The initial lateral dimension (σy) and initial vertical dimension (σz) are calculated by dividing the length of the side of the volume source by 4.3 and dividing the vertical dimension by 2.15. Because of the relatively large operational areas associated with mining, the volume sources used have commensurately large initial lateral dimensions. The vertical dimensions were determined based on many activities involving loading, unloading, and moving, which all potentially generate tall, transient, dust-filled volumes.

The open pit algorithm in AERMOD allows for further definition of the physical orientation and size of the mine area. The emission unit simulated exhaust parameters used are shown in Table F-2 and the reconciliation of emission inventory unit and a daily mining activity emission activity level is provided in Table F-3. The modeled emission rates shown for the open pit emission unit includes portions of overburden removal, blasting, and mining operations emissions.

Receptor Grid and AERMAP

Concentrations in ambient air are determined at receptor locations beginning at the ambient air boundary which is that boundary that demarcates an industrial from a public area. The definition of ambient air is that air to which the general public has access.

Typically, a boundary fence would denote an ambient air boundary. Within that area which the owner controls and has the ability to limit access to the public, the area is not ambient air.

The Wishbone Hill mine area is fairly extensive. The boundary and topography of the area are shown in Figure F-1. Within this boundary are some portions of a maintained and publicly accessible trail. Therefore, Usibelli has placed receptors along the portions of that trail even though within the boundary, reflecting the definition of ambient air. These and the other receptors used in the analysis are shown in Figure F-2 along with the modeled emission unit locations, again with the boundary displayed.

The topography, receptor elevations, and critical hill heights were obtained from 1-degree USGS digital elevation model (DEM) data for the area. The shaded relief of the two sections is shown in Figure F-3. The DEM data were processed in AERMAP (version 09040) and used to determine heights for each of the over 800 receptors modeled.

On Site Meteorological Data Preparation in AERMET

On site meteorological data were collected from October 23, 1988 through October 31, 1991 as part of the Idemitsu Alaska Inc. Wishbone Hill Air Quality and Meteorological Monitoring Program. The meteorological monitoring site location, shown in Figures F-4 and F-5, is located near Wishbone Lake. The tower site and collection as well as the cessation of operations were reviewed and approved by ADEC in correspondence from Gerry Guay (March 1989 and October 1990).

Data collection during the period for the measured values of wind speed, wind direction, temperature, precipitation, and sigma theta were found to exceed 90 percent data capture rates during the full (January through December) 1990 period.

This hourly data from 1990 has been used as the basis for this dispersion modeling analysis. The 1990 surface data were coupled with coincident cloud cover data from the Palmer airport as well as upper air data from the Anchorage International Airport. AERMET was used to process these data. The AERMET stage 3 parameters are shown in Table F-4 employing a single sector, varying values on a monthly basis to better capture the Alaskan winter period of October through April.

A wind rose of the 1990 monitored values coupled with Palmer surface data to include cloud cover is shown in Figure F-6.

This data set is considered to be on-site and representative of conditions found at the mine site. Because the data are site-specific, only a single year of data are necessary for the ambient air quality assessment.

Cloud Cover Sensitivity Analysis

Processing in AERMET requires certain parameters for on-site data to allow the calculation of surface heat fluxes. These parameters were not measured during the Wishbone Hill meteorological data collection. Therefore, cloud cover data from the Palmer airport were used to allow AERMET to calculate necessary surface parameters for AERMOD.

In discussions with the ADEC, the agency suggested that cloud cover could vary between the mine site and the Palmer airport. Therefore, a sensitivity assessment was completed whereby cloud cover was set to either zero (0) to simulate clear skies or ten (10) to simulate overcast skies. These values were varied in AERMET through the TSKC keyword in stage 1 onsite meteorological data processing of the on- site meteorological data.

For the clear skies scenario, the TSKC values were set to 0 for each of the hours of available cloud cover from the Palmer airport data set used in the original AERMET processing. This process was repeated for the overcast case wherein a 10 was substituted for the 0. New AERMET surface and profile files were generated for both the clear sky and overcast sky cases and the original PM_{10} files re-run for each of these new cases (clear sky and overcast). Little difference was found between the cases, especially the overcast case. The conclusion is that sky cover was not an overly sensitive parameter to calculated ambient modeled concentrations.

The results of the comparison are shown in Table F-5.

Wind Erosion and Modeled Emissions

With the exception of the overly conservative assumptions for wind erosion, the updated potential to emit values as shown in Table F-2 have been used in the ambient air quality assessment modeling.

The potential emissions tabulated values for erosion are based on the overly conservative assumptions of constant wind speeds at the fastest mile and constant disturbances every hour of the year. Because this assumption is overly conservative,

the actual emissions are determined based upon meteorological conditions as provided in Chapter 13 of AP-42.

Applying the formulaic approach described in AP-42 suggests that measured wind speeds must be brisk to cause significant wind erosion. The area surrounding the mine site is more rugged than smooth and is characterized by a larger surface roughness. The AERMET processing stage 3 files used a variety of roughness parameters depending on wind direction, with the lowest value used of 0.9 meters (m).

Examining AP-42 Table 13.2.5-2 Threshold Friction Velocities suggests that the threshold wind velocity at 10 m above the surface must be approximately 20 meters per second (m/s to) exceed the threshold friction velocity at the surface for overburden and over 15 m/s to exceed the threshold friction velocity for ground coal or the coal surrounding a coal pile.

Examining the hourly meteorological data file used suggests that no measure wind speeds exceed 20 m/s [45 miles per hour (mph)] and that wind speed during less than 10 hours per year would exceed 15 m/s. Furthermore, the time that these few higher wind speeds occurred (all in November and most on a single day) coincides with likely snow cover in the area which tends to mitigate dust erosion.

Therefore, wind generated erosion is unlikely to occur at the mine site and certainly not every hour as is assumed in the potential emission calculations.

Because of the limited erosion potential as evidenced in the meteorological record, wind generated dust emissions were not modeled as part of the ambient air particulate matter assessment.

Nearby Sources

A survey of the Wishbone Hill area suggests that no nearby sources of emissions exist that would likely impact the mine area. As a result, no off-site sources were explicitly modeled.

Background Concentrations

No nearby ambient monitors to provide ambient background concentrations for the mine site area. The modeled concentrations of concern (annual NO_2 and short-term PM_{10}) were demonstrated to be less than 80 percent of the AAAQS and therefore should provide the same margin of compliance as the ADEC “Fast-track” approval approach.

The nearest ambient PM_{10} monitors to the mine site are located in and around Anchorage. As shown in the Figure 6 wind rose, the mine site will be influenced by winds from remote upwind areas that are fairly free of pollutants. Because of this relatively clean upwind fetch, ambient concentrations should reflect a fairly "clean" atmosphere, not the urban PM_{10} concentrations measured in Anchorage.

Routine PM_{10} ambient monitoring has been conducted at relatively remote Alaska sites such as the North Slope. Ambient PM_{10} monitored concentrations suggest a 24-hours average background concentration of approximately 10 micrograms per cubic meter ($\mu g/m^3$) (see for example the ANSER value of 7.9 $\mu g/m^3$) to 20 $\mu g/m^3$, which is a value ADEC previously determined to be a reasonable PM_{10} background concentration for Northstar. An annual average PM_{10} concentration of 1.8 $\mu g/m^3$, used for the BPXA Liberty Development Project, is used to represent the background concentration for this demonstration.

Ambient NO_2 monitoring is routinely conducted on the North Slope. Annual NO_2 concentrations are approximately 11 $\mu g/m^3$, based on ambient pollutant monitoring conducted at the Endicott Production Facility to support Liberty Development Project. Conservatively adding this value as the background NO_2 in the mine area to the modeled NO_2 concentrations continues to demonstrate compliance with the AAAQS.

Results

The modeled nitrogen dioxide (NO_2) and PM_{10} concentrations are less than the applicable AAAQS, as shown in Table F-6. Using the input parameters described above, the AERMOD model (version 09292) model was run and the ground level concentrations were calculated at each receptor location. The maximum annual values were used along with the highest-second-highest short-term values to compare with the respective AAAQS.

The modeled NO_2 concentrations has been adjusted by applying the ambient ratio method (ARM) default value of 0.75 to the maximum modeled nitrogen oxides (NO_X) concentration to account for downwind NO_X to NO_2 conversion. The PM_{10} concentrations shown are based on the values shown in Table F-2, so that a great many activities are conservatively modeled as if occurring simultaneously. PM_{10} annual concentrations are based on maximum short-term emission rates. This approach results in a conservative assessment of impacts to ambient air quality.

Modeling File Index

The modeling files are provided electronically on the enclosed CD. The modeling files are indexed as follows.

- wishnx20.inp and wishnx20.out - updated annual NO_X AERMOD input and output files;
- wishpm23.inp and wishpm23.out - updated short-term and annual PM_{10} AERMOD input and output files;
- wishpm00.inp and wishpm00.out - sky cover sensitivity PM_{10} with sky cover set to 0 AERMOD input and output files - run based on initially submitted inventory and no wishpm23;
- wishpm10.inp and wishpm10.out - sky cover sensitivity PM_{10} with sky cover set to 10 AERMOD input and output files - run based on initially submitted inventory and not wishpm23;
- wb0090s1, s2, s3.inp and wb001990.pfl and .sfc - AERMET files for sky cover sensitivity runs sky cover set to 0; and
- wb1090s1, s2, s3.inp and wb101990.pfl and .sfc - AERMET files for sky cover sensitivity runs sky cover set to 10.

Table F-1. Usibelli Coal Mine – Wishbone Hill Emission Unit Inventory

ID	Classification	Description	Type	Capacity		Expected Operation	
1	Power Generation	Diesel-fired Engine	Point	900	hp	8,760	hr/yr
2	Heaters	Diesel-fired Heaters	Point	10.0	MMBtu/hr	8,760	hr/yr
3	Topsoil Operations	Topsoil Removal to Storage	Fugitive	N/A		2,660	hr/yr
4	Blasting Operations	Overburden Blasting	Fugitive	10,890	ft^2/blast	240	blast/yr
5	Blasting Operations	Coal Blasting	Fugitive	10,890	ft^2/blast	120	blast/yr
6	Overburden	Overburden Truck Loading	Fugitive	15,459,000	yd^3/yr	10,306,000	tpy
7	Overburden	Overburden Dumping	Fugitive	15,459,000	yd^3/yr	10,306,000	tpy
8	Coal Mining	Coal Removal	Fugitive	1,815,000	tpy	8,760	hr/yr
9	Coal Mining	Coal Dumping - Crusher Feeder	Fugitive	1,815,000	tpy	8,760	hr/yr
10	Coal Mining	Coal Dumping - Run-of-Mine Pile	Fugitive	605,000	tpy	8,760	hr/yr
11	Coal Mining	Coal Reclaim from Run-of-Mine Pile	Fugitive	605,000	tpy	8,760	hr/yr
12	Coal Processing	Crusher	Fugitive	350	tph	1,815,000	tpy
13	Coal Processing	Transfer - Crusher to Conveyor 1	Fugitive	350	tph	1,815,000	tpy
14	Coal Processing	Transfer - Conveyor 1 to Raw Stockpile	Fugitive	350	tph	1,815,000	tpy
15	Coal Processing	Transfer - Raw Stockpile to Conveyor 2	Fugitive	350	tph	1,815,000	tpy
16	Coal Processing	Transfer - Conveyor 2 to Jig Plant	Fugitive	350	tph	1,815,000	tpy
17	Coal Processing	Transfer - Jig Plant to Conveyor 3	Fugitive	350	tph	815,000	tpy
18	Coal Processing	Transfer - Conveyor 3 to Reject Stockpile	Fugitive	350	tph	815,000	tpy
19	Coal Processing	Transfer - Jig Plant to Conveyor 4	Fugitive	350	tph	1,000,000	tpy
20	Coal Processing	Transfer - Conveyor 4 to Clean Stockpile	Fugitive	350	tph	1,000,000	tpy
21	Coal Processing	Transfer - Clean Stockpile to Conveyor 5	Fugitive	350	tph	1,000,000	tpy
22	Coal Processing	Transfer - Conveyor 5 to Loadout Bin	Fugitive	350	tph	1,000,000	tpy
23	Coal Processing	Transfer - Loadout Bin to Truck	Fugitive	350	tph	1,000,000	tpy

ID	Classification	Description	Type	Capacity	Expected Operation
24	Wind Erosion	Mine Area	Fugitive	168 acres	8,760 hr/yr
25	Wind Erosion	Run-of-Mine Coal Stockpile	Fugitive	4 acres	8,760 hr/yr
26	Wind Erosion	Raw Coal Stockpile	Fugitive	1.5 acres	8,760 hr/yr
27	Wind Erosion	Clean Coal Stockpile	Fugitive	1.5 acres	8,760 hr/yr
28	Wind Erosion	Reject Stockpile	Fugitive	0.1 acres	8,760 hr/yr
29	Mobile Equipment	Grader Operations	Fugitive	13,122 VMT/yr	8,760 hr/yr
30	Mobile Equipment	Overburden Hauling - Backfill	Fugitive	19,340 VMT/yr	8,760 hr/yr
31	Mobile Equipment	Overburden Hauling - Stockpile	Fugitive	204,517 VMT/yr	8,760 hr/yr
32	Mobile Equipment	Coal Hauling within Mine	Fugitive	14,103 VMT/yr	8,760 hr/yr
33	Mobile Equipment	Misc. Mine Traffic	Fugitive	50,000 VMT/yr	8,760 hr/yr
34	Mobile Equipment	Other Vehicle Traffic	Fugitive	236,520 VMT/yr	8,760 hr/yr
35	Mobile Equipment	Coal Truck Haul - Loop Road	Fugitive	4,410 VMT/yr	8,760 hr/yr
36	Off-Source	Coal Truck Haul - Access Road	Fugitive	101,430 VMT/yr	8,760 hr/yr

Table F-2. Usibelli Coal Mine – Wishbone Hill Modeled Emission Unit Parameters – PM_{10} Emission Units

Emission Unit	Type	Location UTM			PM_{10} Emission Rate (g/s)	Exhaust Parameters				
		X (m)	Y (m)	Z (m msl)		Height (m)	Temp (K) or σy	Velocity (m/s) or σz	Diameter (m)	
powergen	point	390935	6842524	268.8	0.023	3.65	750	40	0.15	
heater	point	390823	6842743	281.3	0.019	3.65	750	40	0.1	
coalproc	volume	390823	6842743	281.3	0.161	3.65	15.8	1.69	N/A	
mobile	volume	390723	6842843	285.3	2.11	3	275	1.69	N/A	
topsoil	volume	390600	6843103	285.3	1.23	3.65	141	1.69	N/A	
overbrl1	volume	391020	6842850	270.0	1.82	6.10	100	2.837	N/A	
overbrl2	volume	391020	6842590	270.0	1.82	6.10	100	2.837	N/A	
overbrd1	volume	390820	6843360	290.0	1.82	6.10	100	2.837	N/A	
overbrd2	volume	391250	6843570	295.0	1.82	6.10	100	2.837	N/A	
ROAD1	volume	390814	6842750	281.7	0.084	2	7.1	1.69	N/A	
ROAD2	volume	390995	6842600	270.9	0.084	2	7.1	1.69	N/A	
ROAD3	volume	391155	6842430	257.1	0.084	2	7.1	1.69	N/A	
ROAD4	volume	391236	6842150	244.2	0.084	2	7.1	1.69	N/A	
ROAD5	volume	391255	6841880	243.0	0.084	2	7.1	1.69	N/A	
ROAD6	volume	391255	6841570	243.0	0.084	2	7.1	1.69	N/A	
ROAD7	volume	391407	6841480	231.7	0.084	2	7.1	1.69	N/A	
ROAD8	volume	391677	6841340	198.7	0.084	2	7.1	1.69	N/A	
ROAD9	volume	391918	6841210	184.5	0.084	2	7.1	1.69	N/A	
ROAD10	volume	392098	6841130	189.8	0.084	2	7.1	1.69	N/A	
ROAD11	volume	392370	6841020	189.1	0.084	2	7.1	1.69	N/A	
ROAD12	volume	392630	6840940	194.2	0.084	2	7.1	1.69	N/A	
ROAD13	volume	392901	6840780	188.7	0.084	2	7.1	1.69	N/A	
ROAD14	volume	393072	6840690	185.8	0.084	2	7.1	1.69	N/A	
ROAD15	volume	393213	6840540	183.0	0.084	2	7.1	1.69	N/A	
ROAD16	volume	393333	6840350	182.0	0.084	2	7.1	1.69	N/A	
ROAD17	volume	393312	6840190	182.0	0.084	2	7.1	1.69	N/A	
ROAD18	volume	393232	6840100	181.6	0.084	2	7.1	1.69	N/A	
ROAD19	volume	393122	6840010	173.6	0.084	2	7.1	1.69	N/A	
ROAD20	volume	393031	6839940	165.7	0.084	2	7.1	1.69	N/A	
ROAD21	volume	392972	6839890	162.2	0.084	2	7.1	1.69	N/A	

Emission Unit	Type	X (m)	Y (m)	Z (m msl)	PM_{10} Emission Rate ($g/s/m^2$)	Release Height above Pit (m)	X Dimension (m)	Y Dimension (m)	Volume (m^3)	Orientation Angle
mine1	OPENPIT	389525	6843130	280.4	3.780E-06	0	745	745	8369100	50

Table F-3. Usibelli Coal Mine – Wishbone Hill Modeled PM_{10} Emission Unit Key

ID	Classification	Description	Modeled PM_{10} Emission Rate (g/s)	Modeled Emission Unit ID
1	Power Generation	Diesel-fired Engine	0.023	powergen
2	Heaters	Diesel-fired Heaters	0.019	heater
3	Topsoil Operations	Topsoil Removal to Storage	1.23	topsoil – occurs about 1/3 of time modeled as annual rate to reflect intermittent activity
4	Blasting Operations	Overburden Blasting	0.435	mine1
5	Blasting Operations	Coal Blasting	0.435	
6	Overburden	Overburden Truck Loading	0.00	30 day/year non overlapping – simulated through overbrdl and overbrdd
7	Overburden	Overburden Dumping	0.00	
8	Coal Mining	Coal Removal	0.465	mine1
9	Coal Mining	Coal Dumping - Crusher Feeder	0.465	
10	Coal Mining	Coal Dumping - Run-of-Mine Pile	0.155	
11	Coal Mining	Coal Reclaim from Run-of-Mine Pile	0.155	
12	Coal Processing	Crusher	0.063	coalproc
13	Coal Processing	Transfer - Crusher to Conveyor 1	0.015	
14	Coal Processing	Transfer - Conveyor 1 to Raw Stockpile	0.015	
15	Coal Processing	Transfer - Raw Stockpile to Conveyor 2	0.015	
16	Coal Processing	Transfer - Conveyor 2 to Jig Plant	0.015	
17	Coal Processing	Transfer - Jig Plant to Conveyor 3	0.005	
18	Coal Processing	Transfer - Conveyor 3 to Reject Stockpile	0.005	
19	Coal Processing	Transfer - Jig Plant to Conveyor 4	0.006	
20	Coal Processing	Transfer - Conveyor 4 to Clean Stockpile	0.006	
21	Coal Processing	Transfer - Clean Stockpile to Conveyor 5	0.006	
22	Coal Processing	Transfer - Conveyor 5 to Loadout Bin	0.006	
23	Coal Processing	Transfer - Loadout Bin to Truck	0.006	

ID	Classification	Description	Modeled PM_{10} Emission Rate (g/s)	Modeled Emission Unit ID
24	Wind Erosion	Mine Area	0.000	Wind speeds less than threshold friction velocities – no emissions modeled
25	Wind Erosion	Run-of-Mine Coal Stockpile	0.000	
26	Wind Erosion	Raw Coal Stockpile	0.000	
27	Wind Erosion	Clean Coal Stockpile	0.000	
28	Wind Erosion	Reject Stockpile	0.000	
29	Mobile Equipment	Grader Operations	0.14	mobile
30	Mobile Equipment	Overburden Hauling - Backfill	0.63	¼ overbrl1 ¼ overbrl2 ¼ overbrd1 ¼ overbrd2
31	Mobile Equipment	Overburden Hauling - Stockpile	6.65	
32	Mobile Equipment	Coal Hauling within Mine	1.89	mobile – accounts for non-overlapping activities
33	Mobile Equipment	Misc. Mine Traffic		
34	Mobile Equipment	Other Vehicle Traffic		
35	Mobile Equipment	Coal Truck Haul - Loop Road	0.08	
36	Off-Source	Coal Truck Haul - Access Road	1.77	road1 – road21

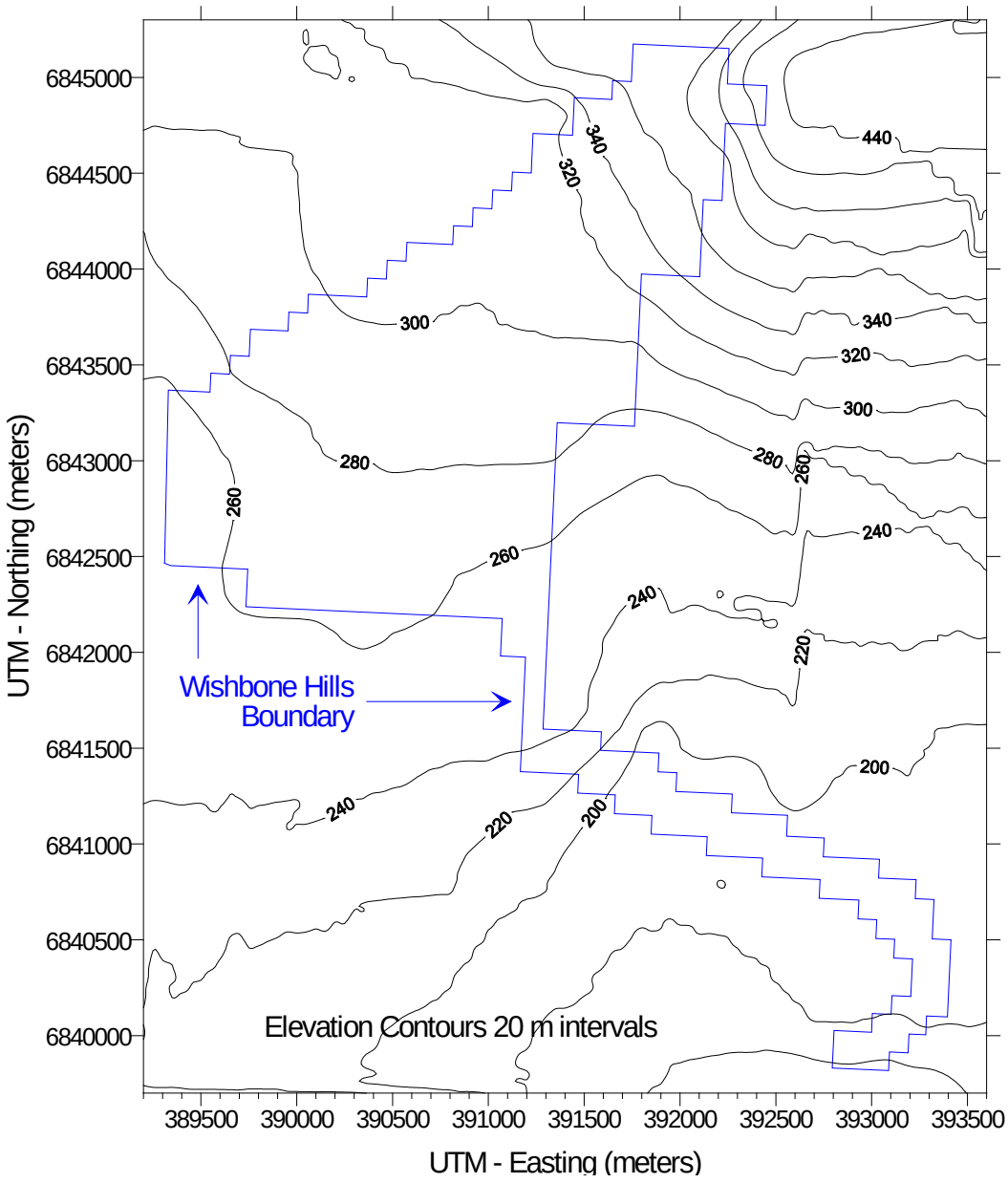

Figure F-1. Usibelli Coal Mine – Wishbone Hill Topography and Boundary

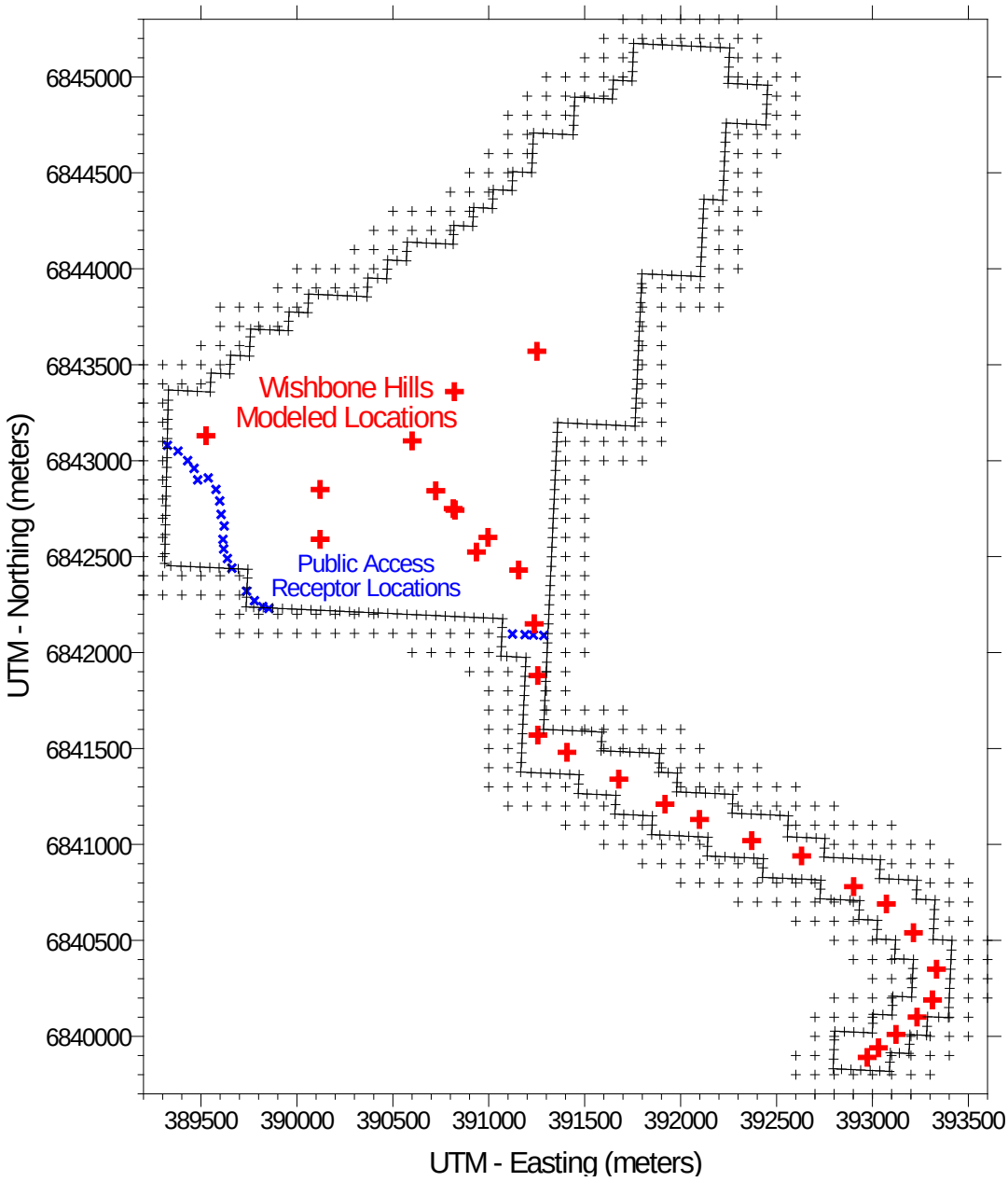

Figure F-2. Usibelli Coal Mine – Wishbone Hill Boundary and Modeled Emission Unit Locations

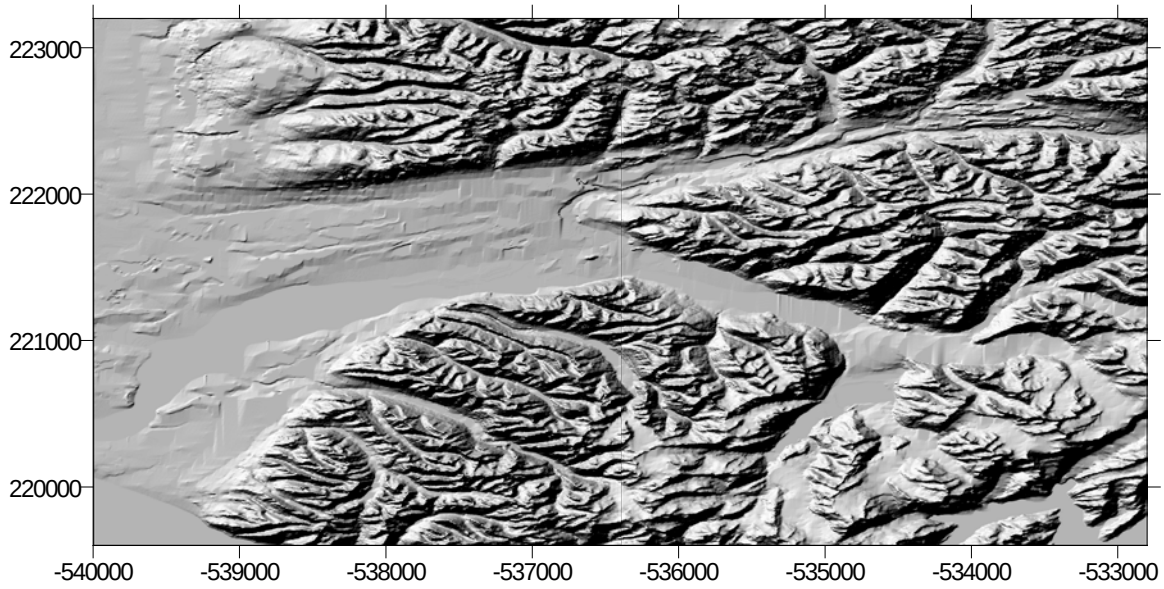

Figure F-3. Shaded Relief from 1-degree DEM used in AERMAP.

Table F-4. Usibelli Coal Mine – Wishbone Hill AERMET Stage 3 Geophysical Parameters

FREQ_SECT	MONTHLY	1			
SECTOR	1	0	360		
	Month	Sector	Albedo	Bowen Ratio	Surface Roughness
SITE_CHAR	1	1	0.43	2	0.9
SITE_CHAR	2	1	0.43	2	0.9
SITE_CHAR	3	1	0.43	2	0.9
SITE_CHAR	4	1	0.43	2	0.9
SITE_CHAR	5	1	0.12	1.5	1.15
SITE_CHAR	6	1	0.12	1.5	1.15
SITE_CHAR	7	1	0.12	0.6	1.3
SITE_CHAR	8	1	0.12	0.6	1.3
SITE_CHAR	9	1	0.12	1.8	1.05
SITE_CHAR	10	1	0.43	2	0.9
SITE_CHAR	11	1	0.43	2	0.9
SITE_CHAR	12	1	0.43	2	0.9

Values are average of deciduous and coniferous provided in AERMET User's Guide Tables 4.1, 4.2a, and 4.3.

Figure F-4. Location of Wishbone Hill Meteorological Monitoring Station Relative to Surroundings

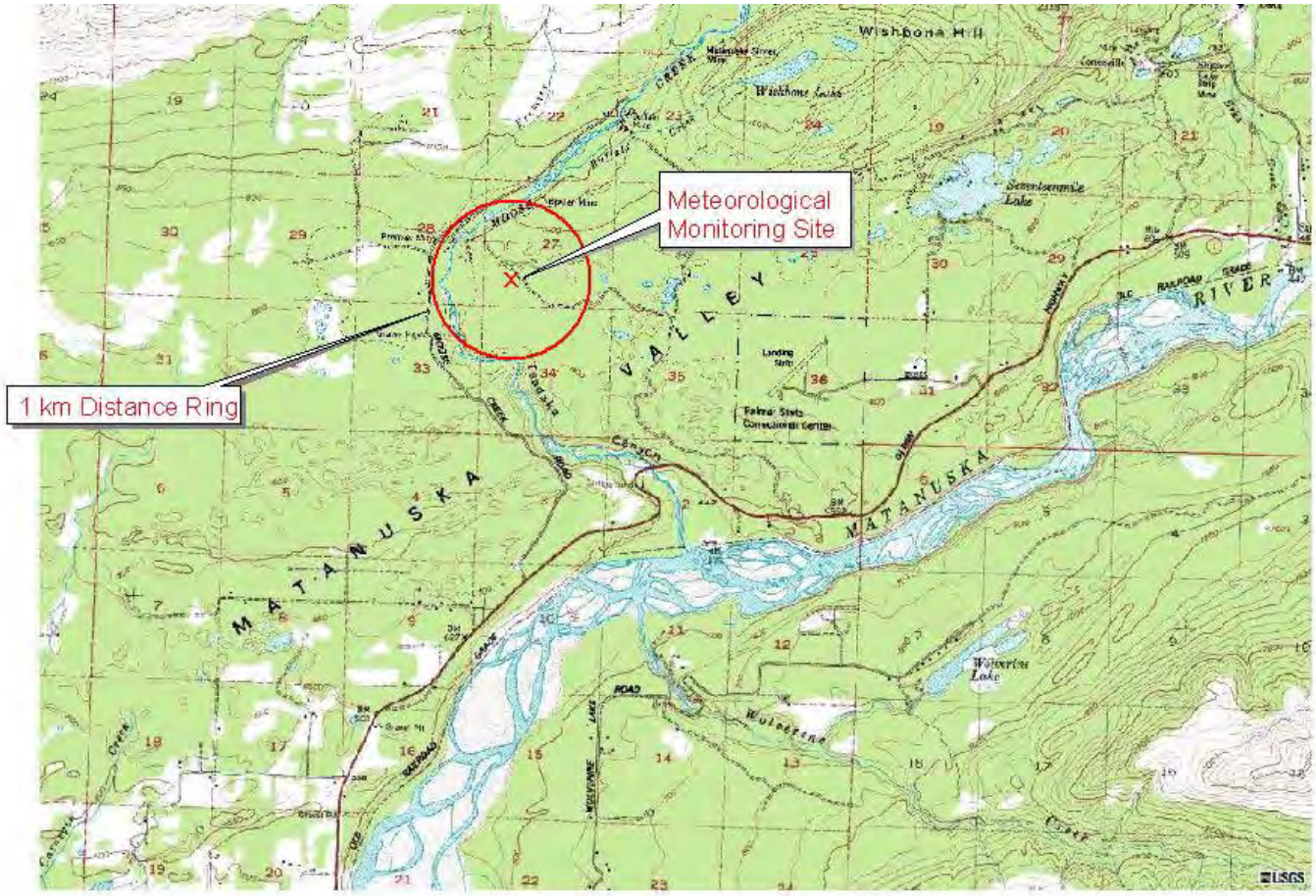

Figure F-5. Wishbone Hill Meteorological Monitoring Site and 1-km Distance Ring

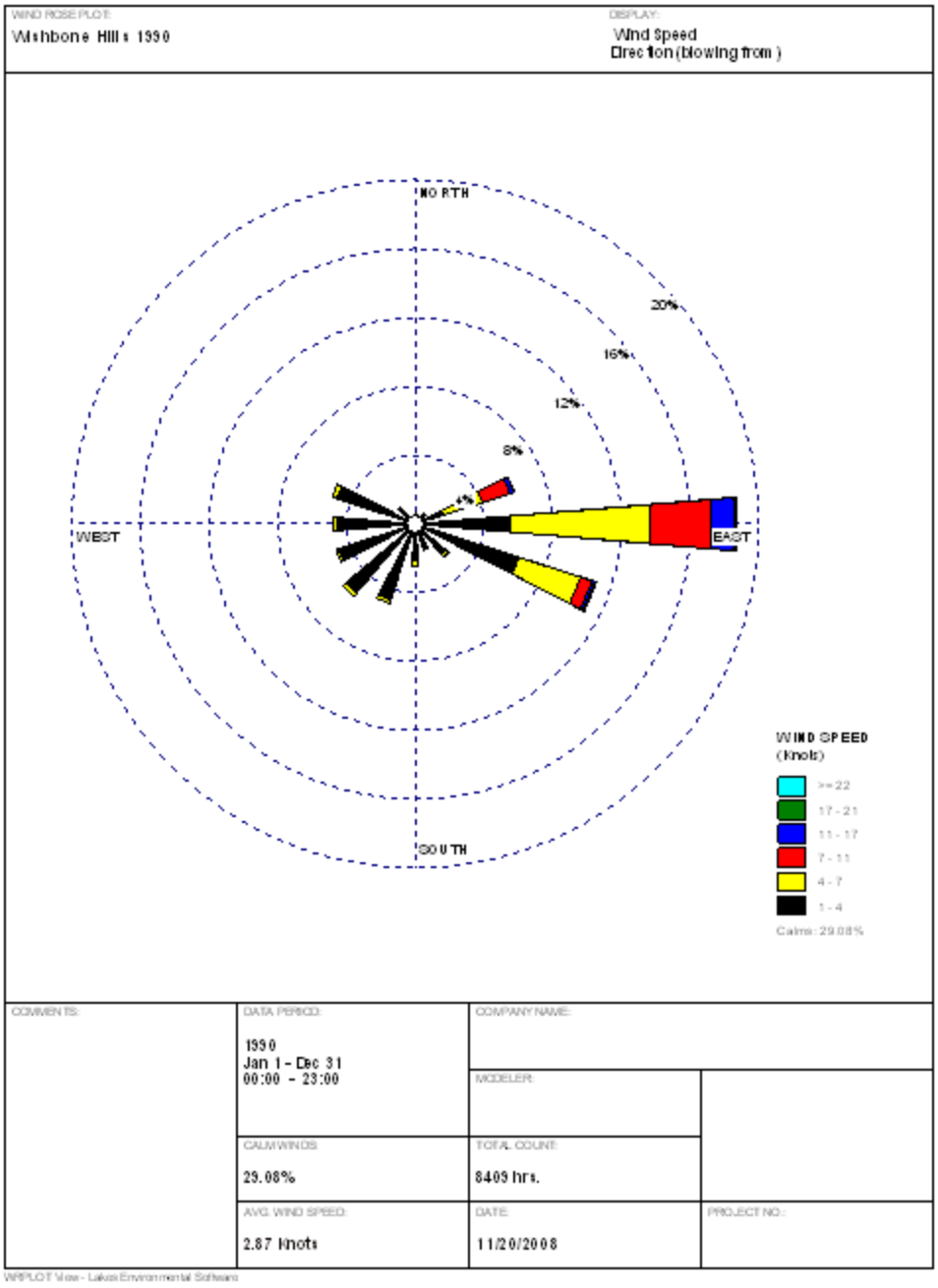

Figure F-6. Wishbone Hill – 1990 Wind Rose

Table F-5. Usibelli Coal Mine – Wishbone Hill Comparative Sky Cover Sensitivity Assessment

Comparative Sky Cover Analysis	Highest-Second-High Modeled PM_{10} Concentration ($\mu g/m^3$)
Original Assessment – Palmer Cloud Cover	110.7
Clear Skies – TSKC = 0	123.0
Overcast Skies – TSKC = 10	110.7

Table F-6. Usibelli Coal Mine – Wishbone Hill Modeled Concentrations

Pollutant	Averaging Period	Ambient Modeled Concentration ($\mu g/m^3$)	Location of Modeled Concentration			Background Conc. ($\mu g/m^3$)	Total Conc. ($\mu g/m^3$)	AAAQS ($\mu g/m^3$)
			X (m)	Y (m)	Z (m msl)			
NO_2	Annual	2.68	391334	6842649	262	11	13.68	100
PM_{10}	24-hour	113.2	393287	6840102	182	20	133.2	150
	Annual	36.5	389577	6842850	259	1.8	38.2	50

Attachment G

Fugitive Dust Control Plan

Usibelli Coal Mine, Inc.
Wishbone Hill Coal Mining and Processing Operation
Fugitive Dust Control Plan

Overview

Usibelli Coal Mine Inc. (Usibelli) will implement active controls to reduce fugitive dust emissions from the Wishbone Hill Coal Mining and Processing Operation. These active controls will require continuous action by Usibelli to effectively reduce fugitive dust emissions. This plan describes the active controls that will be used to reduce dust emissions from the mine haul roads.

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.

Attachment H

Public Access Control Plan

Usibelli Coal Mine
Wishbone Hill Coal Mining and Processing Operation
Public Access Control Plan

Purpose

The purpose of this document is to describe the Public Access Control Plan that will be used to protect the general public from health and safety hazards incident to the industrial activities planned at the Wishbone Hill Coal Mining and Processing Operation (Wishbone Hill). Usibelli Coal Mine Inc. (Usibelli) proposes to mine the western end of the Wishbone Hill coal district on the southwestern extent of Wishbone Hill. The permitted area for the project is located on lands leased from the State of Alaska and the Matanuska Susitna Borough and also on land owned by Usibelli. This plan describes the access control plan that will be used to implement the access restrictions.

Usibelli is fully committed to meeting the applicable Alaska Ambient Air Quality Standards (AAAQS) at the ambient air quality boundary of the project. A primary purpose of this plan is to delineate the area to be protected and controlled for occupational health and safety (within the ambient air quality boundary) from the area that is subject to unrestricted, general public access where the AAAQS are applicable (outside the ambient air quality boundary). A secondary purpose is to ensure that measures are in place to restrict public access within the ambient air quality boundary.

General Information

Usibelli coal mining operations will be conducted on the western end of the Wishbone Hill coal district on the southwestern extent of Wishbone Hill. Currently, access to the property is by a gravel road from the Glenn Highway. The nearest community to the site is Palmer, which is located approximately eight miles to the southwest.

Dispersion modeling has been conducted and demonstrates modeled compliance with all applicable AAAQS at all points on and outside of the ambient air quality boundary.

Public Access Control Measures

Physical Barriers

The land within the ambient air quality boundary encompasses approximately 1,285 acres. (See Plate 1). At the Glenn Highway intersection, public access on this road will be controlled by an automated gate. Where public right-of-way 52715 crosses the mine access road south of the

facilities area, a set of automated gates will be placed on each side of the crossing. Controlled access at the crossing will be maintained with either 4 way stop signs or a large diameter culvert under the access road.

Security fencing will also be constructed around the facilities area and at the west end of Mine Area 1 (See Plate 1). The fencing will be periodically marked with identification and no trespassing signs.

Posting

In addition to the physical barriers cited above, public access to the site will be restricted using strategically located signs. Signs restricting public access and warning of potential health hazards will be posted at intersection of the Glenn Highway and the mine access road, the intersection of public right-of-way 52715 and the mine access road, and approximately every 800 yards along the ambient air quality boundary. The sign specifications will be as follows:

- Each sign will be 2 feet by 4 feet and will be mounted on posts.
- Each sign will be inspected semi-annually and will be repaired or replaced, as necessary.
- Each sign will be free of visible obstructions.
- Each sign will read:

DANGER

RESTRICTED ACCESS
AMBIENT AIR QUALITY BOUNDARY
AUTHORIZED PERSONNEL ONLY
PLEASE CHECK IN WITH SECURITY

Proposed Surveillance

For all operations, all on-site personnel will be informed of the air permitting requirements to maintain an exclusion zone at the location. All personnel will be asked to observe the location perimeter as they conduct their regular duties. Any suspected violation of the exclusion zone by unauthorized personnel will be immediately reported to mine management.

Mine personnel will periodically observe the perimeter of the facilities area. If unauthorized people are observed, a log of the time and date of the observation will be recorded on the

attached form. A record of the completed logs will be maintained on location in the Wishbone Hill Mine office.

Trespass Individuals

If a mine employee observes unauthorized personnel within the ambient air quality boundary, appropriate measures will be taken by the employee to address potential health and safety concerns. If safety is not of immediate concern, mine employees will be instructed to use the following protocol when dealing with unauthorized entry. A log of the incidence will be recorded on the attached form and filed at the mine office for future reference.

- Approach the unauthorized person (or persons) and request that they leave the area immediately.

- If the unauthorized individual(s) refuse to leave the area after the above request, the individuals(s) will be informed that they are in an area in which the AAAQS may not be met and that State regulations require Usibelli to restrict entry to the posted area to authorized personnel only. The unauthorized person or persons will again be asked to leave the exclusion zone area.

- If the unauthorized individual(s) still refuse to leave, the individual(s) will be informed that Usibelli will not be liable or responsible for any harm they may encounter by being in a restricted entry area.

- The mine personnel will also request the name or names of the unauthorized personnel at that time. The mine individual will then log the encounter with the unauthorized person or persons on the surveillance form. The data to be logged in such a situation will include:

    1. Day and time;
    2. The name of the individual(s) (if known or otherwise provided);
    3. The method of entry into the property (e.g. by foot, snow machine, etc.);
    4. Duration of unauthorized presence within the ambient air boundary; and
    5. Other pertinent information as appropriate.

    The mine individual will also report such incidents to mine management.

Air Exclusion Zone
Surveillance Monitoring Form

Date and Time	Pad Surveillance Conducted by	Surveillance Comments

PLATE 1

MINE AREA 1 & 2 AMBIENT AIR QUALITY BOUNDARY

AMBIENT AIR QUALITY BOUNDARY

RELOCATED SEGMENT OF BUFFALO CREEK

SEDIMENT POND NO. 7

SEDIMENT POND NO. 6

BUFFALO CREEK PIPELINE DIVERSON

SEDIMENT POND NO. 5

TOPSOIL STOCKPILE NO. 2

SEDIMENT POND NO. 4

MINE AREA 2

OVERBURDEN STOCKPILE NO.3

AMBIENT AIR QUALITY BOUNDARY

OVERBURDEN STOCKPILE NO.2

MINE AREA 1

OVERBURDEN STOCKPILE NO.1

TOPSOIL STOCKPILE NO.1

SEDIMENT POND NO.2

FRESH WATER POND NO.2

FRESH WATER POND NO.1

RUN OF MINE STOCKPILES

SEDIMENT POND NO.3

FACILITIES AREA SEDIMENT POND

EXPLOSIVES STORAGE AREA

WASH DOWN WATER RECYCLE POND

PREP PLANT

CLEAN COAL STOCKPILE

SLURRY POND

INITIAL OVERBURDEN STOCKPILE NO.1

DIVERSION BERM

LEACH FIELD

PLANT AREA

SHOP / WAREHOUSE OFFICE AREA

SEDIMENT POND NO.1

R.O.W. 52715

SEWAGE TREATMENT

MAIN SUBSTATION

LIMITS OF DISTURBANCE

RELOCATED SEGMENT OF R.O.W. 52715

RELOCATED SEGMENT OF R.O.W. 52715

GATE

RELOCATED SEGMENT OF R,O.W. 52715

AMBIENT AIR QUALITY BOUNDARY

GATE

W.S.=1523.8

W.S.=744.2

W.S.=698.4

N 2,820,000

N 2,815,000

N 2,810,000

E 1,805,000

E 1,810,000

Sec.21 Sec.22 Sec.24 Sec.28 Sec.27 Sec.26 Sec.25 Sec.34 Sec.35 Sec.36 Sec.33 Sec.2 Sec.1 Sec.3 Sec.4

LEGEND

- PERMIT BOUNDARY
- DISTURBANCE BOUNDARY
- LIMITS OF MINING
- STOCKPILE LIMITS
- FACILITIES AREAS
- ROADS - UNPAVED
- ROADS - PAVED
- DIVERSION DITCHES
- PIPELINE
- SECTIONS LINES
- EXISTING CONTOURS
- MINE ROADWAYS
- TRAIL
- BUFFALO CREEK RELOCATION
- RESTRICTED ACCESS SIGN
- CROSS SECTIONS LOCATION
- FENCE
- TOPSOIL STOCKPILES
- OVERBURDEN STOCKPILES
- OVERBURDEN STOCKPILES CONSTRUCTED ON BACKILLED PIT AREAS

N

SCALE
0 500' 1000'
CONTOUR INTERVAL: 10FT.

STATE OF ALASKA 49th
ALAN E. RENSHAW
CE 9774
REGISTERED PROFESSIONAL ENGINEER

Map Area
R 2 E R 3 E
T 19 N
T 18 N
Wasilla
Palmer
Sutton
Matanuska River
Glenn Highway

NOTES:
1. HORIZONTAL DATUM IS ALASKA STATE PLANE, NAD83.
2. VERTICAL DATUM IS NAVD 88.
3. MAPPED FOR 1" = 200 FEET, 10 FOOT CONTOUR INTERVAL.
4. DATE OF PHOTOGRAPHY: 10-12-1997
5. THIS MAP CONFORMS TO ASPRS CLASS I MAP STANDARDS.
6. THE VERTICAL ACCURACY IS APPROXIMATELY ONE HALF OF THE CONTOUR INTERVAL SHOWN IN ANY GIVEN AREA ON THE MAP. CONTOURS IN VEGETATED AREAS MAY BE LESS ACCURATE. CONTOURS IN DENSE VEGETATION ARE LIKELY TO BE LESS ACCURATE.

SUBJECT REVISIONS

REV.	DATE:	BY:	DESCRIPTION

DESIGN BY:
DRAWN BY:
CHECK BY:
DWG FILE:
DATE DRAWN:

WISHBONE HILL MINE
USIBELLI COAL MINE, INC.
PERMIT NUMBER 01-89-796

MINE AREA 1 & 2
AMBIENT AIR QUALITY BOUNDARY

WISHBONE HILL MINE

USIBELLI COAL MINE, INC.
P.O. BOX 1000, HEALY, ALASKA 99743
(907) 683-2226

PLATE No. 1
SHEET No. 1 OF 1
REV. 0

Attachment I

Supporting Documentation

USIBELLI COAL MINE, INC.

WISHBONE HILL COAL MINING AND PROCESSING OPERATION

SUPPORTING OPERATIONAL INFORMATON

The proposed Wishbone Hill surface coal mining operation will utilize a truck/shovel, direct haul back mining system. The major project components include a surface coal mine removing 1,815,000 U.S. tons per year of raw coal at full production and a coal washing plant for improvement of coal quality. Approximately 1,000,0000 U.S. tons per year of processed coal will be delivered to market.

The mine will use standard surface mining techniques. Before mining begins in an area, ;the ground will be cleared of vegetation and the topsoil will be stripped and stored for later reclamation activities. Cleared vegetation will be either incorporated into the topsoil or buried in the mine pits. No burning will be done. The overburden and coal will be loosened for removal by drilling and blasting with a combination of ammonium nitrate and fuel oil (ANFO). Both coal and overburden will be removed from the active mining areas with hydraulic excavators and/or shovels and loaded into 150 ton haul trucks. The overburden will be hauled to backfill areas or stockpiles for temporary storage. The coal will be hauled to the processing plant.

On the return trip from the processing plant, trucks will pick up waste from the coal wash facility and dispose of the material in the backfill areas. Coal from the mine will be dumped in either a feed hopper or a run-of-mine (ROM) coal storage pile near the wash plant. Approximately 2/3 of the coal coming from the mine face (1,210,000 tons/year) will be placed directly in the hopper while the other 1/3 (605,000 tons/year) will be placed in the ROM storage pile. The coal in storage will be later removed with a front-end loader and place in the hopper.

The total volume of coal removed from the mine will eventually pass through the coal feed hopper. The actual volume of coal will change somewhat form year to year as the mine develops but at full scale production, the coal fee rate is expected to average 1,815,00 U.S. tons per year. The moisture content of the ROM coal is approximately 6%.

The coal hopper will feed a conveyor belt which transfers coal to a feeder breaker and then a secondary crushing/screening operation which will segregate the crushed ROM coal into 3 streams: a refuse or rock stream; raw coal fines; and a raw coal stockpile for wash plant feed

stock. Approximately 0.8% of the ROM coal leaving the breaker (14,520 tons) will contain rock and refuse and will be diverted into a refuse pile before entering the secondary crusher/screening operation. This refuse will be eventually hauled back to the mine for disposal in the backfill areas. Raw coal from the secondary crushing/screening operation will be placed in a stockpile and conveyed from there to the wash plant. The coal fines from the secondary crushing/screening operation will be blended back in with the final product.

Coal entering the wash plant will be immediately wetted and no longer a source of dust emissions. The wash plant separates the shale from coal with water, screens and centrifuges. There are no thermal dryers at this facility. Coal exiting the plant will go via conveyor either directly to a truck loadout facility or to a clean coal storage pile. The moisture content of the clean coal product will be approximately 8%. Coal placed in the clean coal storage pile will be reclaimed by a front-end loader and will pass to the truck loadout on a conveyor system.

Waste from the wash plant will be hauled back to the mine for placement in the backfill areas. The coal haul trucks will be used to transport the waste back on their return trip during delivery of coal from the mine face to the wash plant. Materials balance computes a total of 700,480 tons per year of waste generated in the wash plant. Approximately 15% of this waste exits the plant with the slurry water and settles in a slurry pond. The remaining 85% (595,408 tons per year) will be hauled back to the mine along with the 14,520 tons per year of refuse from the feeder breaker (total haul back – 609,928 tons per year).

Product coal (1,000,000 tons/year) will be place in covered trucks by a telescoping chute at the loadout facility and hauled approximately 2.7 miles on the project access road to the Glenn Highway. The haul trucks will be covered, road-legal highway trucks.

The only pollutant emitted in significant quantities by the project will be particulate matter, mostly in the form of fugitive dust. A total of 36 quantifiable sources of emission have been identified. For the computation of emission estimates, year 4 of mining was used. This year was determined to be the worst case year in terms of total emissions because the largest volume

of overburden material requiring the longest haul distance will be moved during this year. In addition, the mining operation as well as the coal processing facilities will be at full production.

Attachment C of Usibelli Coal Mine, Inc.'s May 2010 Application for an Air Quality Control Minor Permit presents the emission calculations and parameters used in the computations. Additional information concerning the major operational sources is summarized below.

- ***Topsoil Operations*** – One dozer and two scrapers will be used in topsoil removal activities. Each unit will be used 5 days per week, for a period of four months (16 weeks), and will be operated for two working shifts per day (6.5 hours of operation per shift). The operating hours on an annual basis are assumed to be 85% of the working hours above to account for mechanical availability of the equipment. This equipment will only operate during the summer months. The average moisture content of the topsoil is 6%. The average silt content of the topsoil is 65%.

- ***Blasting Operations*** – Both the overburden and coal will be blasted using a combination of ammonium nitrate and fuel oil (ANFO). The overburden and coal will require a total of 240 blasts and 120 blasts per year, respectively. The capacity of each blasted is estimated at 10,890 square feet

- ***Overburden Removal*** – Two hydraulic excavators with 23 cubic yard buckets will be used to lift the overburden material into the back of 150 ton end-dump haul trucks. A total of 15,459,000 bank cubic yards (10,306,000 tons) per year of overburden will be removed in the worst case year (year 4). The average moisture of the overburden is approximately 6%.

- ***Coal Removal*** – A hydraulic excavator will be used to lift the coal into the back of 150 ton en-dump haul trucks. These are the same trucks used in the overburden hauling operation. Although the capacity is 150 tons for materials of the density of the overburden, the coal is lighter and the full 150 ton weight capacity will not fit in the bed of the truck. As a result, the actual capacity of the trucks for hauling coal is only 110 tons. A total of 1,815,000 tons per year of coal will be removed during full scale production.

- ***Coal Dumping*** – The coal that is removed from the mining areas will be dumped at the wash plant. As discussed earlier on, approximately 2/3 of the mined coal (1,210,000 tons/year) will be placed directly in the coal feed hopper at the wash plant while the remaining 1/3 (605,000 tons/year) will be placed in the ROM storage pile near the coal washing facility. The coal in storage will have to be reclaimed with a front-end loader and placed in the coal feed hopper.

- ***Wind Erosion*** – The quantifiable sources of fugitive dust emissions from wind erosion are summarized below:

Location	Area (Acres)
Mine Area (Year 4)	168
ROM Coal Stockpile	4
Raw Coal Stockpile	1.5
Clean Coal Stockpile	1.5
Reject Stockpile	0.1

- ***Mobile Equipment*** – The quantifiable sources of emissions from the operation of mobile equipment are summarized below:

Operation Description	Vehicle Miles Traveled per Year
Grader Operations	13,122
Overburden Hauling – Backfill	19,340
Overburden Hauling – Stockpile	204,517
Coal Hauling within Mine	14,103
Coal Truck Haul – Loop Road	4,410
Coal Truck Haul – Access Road	101,430
Misc. Mine Traffic	50,000
Other Vehicle Traffic	236,520

  - *Grader* Operations – One grader will be used for road maintenance and construction. The grader will be operated 19 shifts per week for 50 weeks (6.5 hours of operation per shift). The operating hours on an annual basis are assumed to be 85% of the working hours above to account for mechanical availability of the equipment. The average grader speed is estimated at 5 mph. The approximate road surface silt content is 5%.

  - *Overburden* Hauling – For overburden hauling, a total of 15,459,000 bank cubic yards (BCY) will be removed in year 4. Of this total,10,821,000 BCY will be transported to the stockpile area while the remaining 4,638,000 BCY will be directly hauled back to the pit area. A waste density of 1.5 tons BCY is used to compute the quantity of waste in tons.

  - *Coal Hauling* – As noted above, only 110 tons of coal will be loaded in each of the 150 ton capacity haul trucks. After loading of the trucks, the coal will be hauled to the wash plant and dumped either in the coal feed hopper or at the coal storage pile.

    Product coal will be delivered to market via the 2.7 mile mine access road. This mileage includes a 0.2 mile loop at the truck loadout facility. Fifty-ton haul

trucks with double bottom-dump trailers (approximately 25 tons per trailer) will be used to transport the coal. When the trucks are loaded, they will have a gross vehicle weight of 75 tons and 25 tons unloaded. Therefore, average vehicle weight for a round trip will be 50 tons.

- *Misc. Mine Traffic* – This traffic includes supervisor pickup trucks, fuel-lube trucks, maintenance vehicles, and other small vehicles that will occasionally travel the mine roads during normal operations.

- *Other Vehicle Traffic* – In addition to the road legal coal haul trucks, employees will use the access road for going to and from the mine as well as other mine support vehicles. A total of 120 round trips per day are assumed for the access road.

Attachment J

Electronic Files