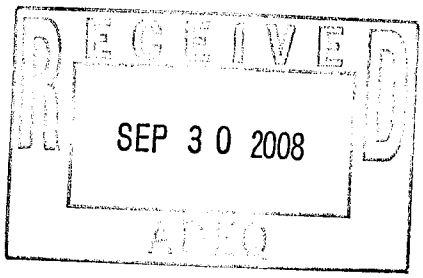
CTS: 194428

FREEPORT-McMoRan COPPER & GOLD
Freeport McMoRan Morenci Inc.
4521 U.S. Highway 191
Morenci, AZ 85440



September 29, 2008

RETURN RECEIPT REQUESTED

Ms. Nancy Wrona
Director, Air Quality Division
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

RE: Minor Permit Revision Application:
Establishment of Construction Schedule for Installation of Fabric Filter Dust Collectors for the In-Pit Crusher #1 Conveying System; Freeport-McMoRan Morenci Inc., Class I Air Quality Permit # 42474

Dear Ms. Wrona:

In accordance with A.A.C. R18-2-319.D, Freeport-McMoRan Morenci Inc. (FMMI) is submitting the enclosed minor permit revision (MPR) application to establish a construction schedule for the installation of four dust collectors on the conveyor belt transfer points associated with In-Pit Crusher #1 (IPC #1) as authorized by the renewal of Class I Air Quality Permit No. 42474.

Description of Proposed Changes

FMMI's *Significant Permit Revision and Revised Permit Renewal Application for Class I Air Quality Permit No. M110734P1-99,* March 2008, proposed to install fabric filter dust collectors (FFDCs) on four conveyor belt transfer points associated with IPC #1 with voluntarily accepted outlet grain loading limits of 0.004 grains/dscf. These transfer points (see the process flow diagram in Appendix A) correspond to:

1. Conveyor Transfer Point DC1 to P8 (PN 007)
2. Conveyor Transfer Point P2 to P4 (PN 013)
3. Conveyor Transfer Point P4 to P5 (PN 014)
4. Conveyor Transfer Point P5 to P6 (PN 015)

While Attachment "B" Condition III.B.2.e of the Class I renewal permit incorporated the voluntarily accepted conditions, it did not expressly provide a reasonable construction period for the installation of the proposed FFDCs. Because FMMI could not legally begin actual construction of the FFDCs before permit issuance, it would be impossible to achieve instantaneous compliance with the requirement to install the FFDCs upon permit issuance. Unfortunately, without express language providing a transitional period to allow for installation of the FFDCs, Attachment "B" Section III.B.2.e might be interpreted as requiring that the proposed FFDCs be installed and operational immediately upon permit issuance.

To address this oversight, this minor permit revision application seeks to expressly incorporate a construction schedule for the installation of the proposed FFDCs. The application also seeks corresponding revisions to the testing provisions for these FFDCs to clarify that performance testing to

demonstrate initial compliance with the voluntarily accepted limits must be conducted within 60 to 180 days of start-up, as required by A.A.C. R18-2-312.

FMMI proposes to complete installation of the four FFDCs within eight months from ADEQ's issuance of the Title V permit renewal. This time period is necessary because it will require six months for the procurement, fabrication and delivery of the dust collectors. Installation of power and infrastructure at the four transfer points will be done concurrently. An additional two months will be required for the final on-site FFDC installation.

Change in Emissions of Regulated Air Pollutants

Although there is no real change in emissions as a result of adding the proposed permit language, ADEQ permitting staff has requested an evaluation of the change in emissions from the hypothetical removal of the proposed FFDCs. As directed, FMMI has evaluated the only regulated air pollutants from the four transfer points: particulate matter (PM) and particulate matter with nominal aerodynamic diameter equal to or less than ten microns (PM_{10}). Calculations of the change in emissions for these species are presented in Appendix A, and are based upon the following assumptions:

1. Continuous operation at maximum capacity,
2. No pollution controls prior to the installation of the fabric filter dust collectors, and
3. Fabric filter dust collectors at an outlet grain loading of 0.004 grains/dscf after installation.

The change in the potential to emit (PTE) based upon these assumptions are 6.11 tpy for PM_{10} and 21.48 tpy for PM. These are less than the corresponding "significant" emission rates of 15 for PM_{10} and 25 tpy for PM. The calculated change in the PTE is also greater than actual because the calculations ignore the effect of the existing water sprays prior to installation of the proposed FFDCs. These water sprays will continue to be operated in the interim.

Regulatory Requirements

The proposed changes will not trigger any new applicable requirements.

Demonstration of Compliance with Minor Permit Revision Requirements

Pursuant to A.A.C. R-18-2-319(A), minor permit revision procedures may be used only for those changes at a source that satisfy eight requirements. Each of those requirements is addressed below.

1. *The proposed changes must not violate any applicable requirements.*

   The proposed changes do not violate any applicable requirement.

2. *The changes must not involve substantive changes to existing monitoring, reporting, or recordkeeping requirements in the permit.*

   No substantive changes to existing monitoring, reporting, or recordkeeping requirements in the permit are proposed in this application.

4. *The changes must not require or change a case-by-case determination of an emission limitation or other standard, or a source specific determination of ambient impacts, or a visibility or increment analysis.*

   The proposed changes will not require or change a case-by-case determination of emission limitations, ambient air impacts determinations, or visibility or increment analyses.

5. *The changes must not be modifications under any provision of Title I of the Clean Air Act.*

   The proposed changes are not "modifications" under Title I of the Clean Air Act (i.e., a "major modification" subject to major NSR/PSD or a "modification" subject to the NSPS.)

6. *The proposed revisions must not involve changes in fuels not represented in the permit application or provided for in the permit.*

   No fuel changes are included in the proposed project.

7. *The increase in the source's potential to emit any regulated air pollutant must not be significant as defined in A.A.C. R18-2-101.*

   As shown above, the increase in potential emissions of regulated pollutants will not be "significant" as defined under A.A.C. R18-2-101(106).

8. *The changes must not require processing as a significant revision under A.A.C. R18-2-320.*

   As demonstrated in #1 through #7 above, the transition period prior to installation of the fabric filter dust collectors meet the requirements for processing as a minor permit revision. The proposed changes do not require a significant change in existing monitoring permit terms or conditions or a relaxation of reporting or recordkeeping permit terms or conditions. Furthermore, the proposed changes do not constitute a modification to a major source of federally listed hazardous air pollutants, or reconstruction of a source, process, or production unit under Section 112(g) of the Clean Air Act. Accordingly, the proposed changes do not require processing as a significant permit revision under A.A.C. R18-2-320.

If you have any questions or require more information, please contact Russell Gossett at (928) 865-6529 or Jarrett Airhart at (928) 865-6266 of my staff concerning this submittal.

Sincerely,

Jeffers Campbell
Manager, Environmental Services

Attachments:

Certification of Truth, Accuracy, and Completeness
Standard Application Form
Emission Sources Form
Suggested Draft Minor Permit Revision Proposed Permit, Permit Terms and Conditions
Appendix A – Emissions Information

CERTIFICATION OF TRUTH, ACCURACY AND COMPLETENESS

I certify that to the best of my knowledge, based on information and belief formed after reasonable inquiry, that the statements made in the minor permit revision application, and draft revised operating permit are true, accurate, and complete. I further certify that the proposed project meets the criteria for use of minor permit revision procedures and hereby request that these procedures be used.

Signature of Responsible Official: RH White

Title of Signer: Senior Vice President, Southeastern Arizona

Typed or Printed Name of Signer: R. Hunter White

Date: 9-29-08

CTS# 194428

ADEQ
AIR QUALITY DIVISION
08 OCT 10 PM 2:41

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division
1110 West Washington • Phoenix, AZ 85007 • Phone: (602) 771-2338

STANDARD PERMIT APPLICATION FORM
(As required by A.R.S. § 49-426 and A.A.C. Title 18, Chapter 2, Article 3)

1. Permit to be issued to: (Business license name of organization that is to receive permit) Freeport-McMoRan Morenci Inc.

2. Mailing Address: 4521 U.S. Highway 191
   City: Morenci State: AZ ZIP: 85540

3. Previous Company Name: Freeport McMoRan Morenci Inc.

4. Name (or names) of Owners/Principals: Freeport-McMoRan Copper & Gold, Inc.
   FAX #: (602) 234-8337 Phone: (602) 234-8100

5. Name of Owner's Agent: R. Hunter White
   FAX #: (928) 865-4822 Phone: (928) 865-4521, ext. 6211

6. Plant/Site Manager or Contact Person and Title: Jeffery Campbell, Manager, Environmental Services
   FAX #: (928) 865-3861 Phone: (928) 865-6484

7. Plant Site Name: Morenci Operations
   Plant Site Location/Address: 4521 U.S. Highway 191
   City: Morenci County: Greenlee ZIP: 85540
   Indian Reservation (if applicable, which one): N/A
   Latitude/Longitude, Elevation: 33-03-54/109-20-32, 4100ft. MSL

8. Equipment Purpose: Incorporate a Construction and Testing Schedule to Fabric Filter Dust Collectors Being Installed on IPC #1 Conveyor Transfer Points
   Equipment List/Description: Discharge Conveyor DC1 to Conveyor P8, Conveyor P2 to P4, Conveyor P4 to P5, Conveyor P5 to P6

9. Type of Organization:
   ☒ Corporation ☐ Other: ☐ Individual Owner
   ☐ Partnership ☐ Government Entity (Government Facility Code:_____)

10. Permit Application Basis: ☐ New Source ☒ Revision ☐ Renewal of Existing Permit
    (*Check all that apply*) ☐ Portable Source ☐ General Permit
    For renewal or modification, include existing permit number: 42474
    Date of Commencement of Construction or Modification: Upon Submittal of Application

    Is any of the equipment to be leased to another individual or entity? ☐ Yes ☒ No
    Standard Industrial Classification Code: 1021 State Permit Class: Class I

11. Signature of Responsible Official of Organization: RH White
    Official Title of Signer: Senior Vice-President, Southeastern Arizona

12. Typed or Printed Name of Signer: R. Hunter White
    Date: October 7, 2008 Telephone Number: (928) 865-4521, ext. 6221
    Company Name: Freeport-McMoRan Morenci Inc.

COMPANY NAME Freeport-McMoRan Morenci Inc.

EMISSION SOURCES

Estimated "Potential to Emit" per R18-2-101
Review of applications and issuance of permits will be expedited by supplying all information on this Table.

PAGE 1 OF 1
DATE 9-22-2008

REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
OPERATION ID NUMBER – 001 (1)		CHEMICAL COMPOSITION OF TOTAL STREAM	AIR POLLUTANT EMISSION RATE		UTM COORDINATES OF EMISSION PT.(5)			STACK SOURCES (6)					NONPOINT SOURCES (7)	
PROCESS NUMBER	MINING NAME	REGULATED AIR POLLUTANT NAME (2)	#/ HR. (3)	TONS/ YEAR (4)	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND (feet)	HEIGHT ABOVE STRUC. (feet)	EXIT DATA DIA. (ft.)	EXIT DATA VEL. (fps.)	EXIT DATA TEMP. (°F)	LENGTH (ft.)	WIDTH (ft.)
Emissions Information Prior to Installation of Fabric Filter Dust Collectors at These Processes.														
007	DC1/P8 Transfer Point	PM_{10}	0.83	3.45	For locations, see *Significant Permit Revision and Revised Permit Renewal Application for Class I Air Quality Permit No. M110734P1-99*									
		PM	1.75	7.29										
013	P2/P4 Transfer Point	PM_{10}	0.83	3.45										
		PM	1.75	7.29										
014	P4/P5 Transfer Point	PM_{10}	0.83	3.45										
		PM	1.75	7.29										
015	P5/P6 Transfer Point	PM_{10}	0.83	3.45										
		PM	1.75	7.29										

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL N/A feet
ADEQ STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (A.A.C. R18-2-101)

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plat plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as any lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
2. Components to be listed include regulated air pollutants as defined in R18-2-101. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_x), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate matter less than 10 microns (PM_{10}), etc. Abbreviations are O.K.
3. Pounds per hour (#/HR) is maximum potential emission rate expected by applicant.
4. Tons per year is annual maximum potential emission rate expected by applicant, which takes into account process operating schedule.
5. As a minimum applicant shall furnish a facility plat plan as described in the filing instructions. UTM coordinates are required only if the source is a major source or is required to perform refined modeling for the purposes of demonstrating compliance with ambient air quality guidelines.
6. Supply additional information as follows if appropriate:
   (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   (b) Stack's height above supporting or adjacent structured if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in R18-2-101.

Please note that the PTE estimates provided on this form are for information purposes only and are not intended to become permit limitations. Additionally, the PTE estimates presented are the maximum potential to emit resulting from the changes described in this minor permit revision application.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division
1110 West Washington St. • Phoenix, AZ 85007 Phone: (602) 771-2338

MINOR PERMIT REVISION TO AIR QUALITY CONTROL PERMIT

(As required by Title 49, Chapter 3, Article 2, Section 49-426 Arizona Revised Statutes)

This air quality control permit does not relieve applicant for meeting all air pollution regulations.

1. REVISION TO BE ISSUED TO (Business License Name of Organization that is to receive permit:

Freeport-McMoRan Morenci Inc.

2. NAME (OR NAMES) OF OWNER OR PRINCIPALS DOING BUSINESS AS THE ABOVE ORGANIZATION:

Freeport-McMoRan Copper & Gold, Inc.

3. MAILING ADDRESS: *4521 U.S. Highway 191*

Morenci	*Arizona*	*85540-9795*
CITY **OR** COMMUNITY	STATE	ZIP

4. ORIGINAL EQUIPMENT LOCATION ADDRESS: *4521 U.S. Highway 191*

Morenci	*Arizona*	*85540-9795*
CITY **OR** COMMUNITY	STATE	ZIP

5. FACILITIES OR EQUIPMENT DESCRIPTION: *Copper Mining Facility*

6. THIS REVISION ISSUED SUBJECT TO THE FOLLOWING: *Conditions as described in attached*

7. ADEQ MINOR REVISION NUMBER _____ PERMIT CLASS *I*

MINOR REVISION ISSUED THIS _____ DAY OF _____, **2008**

_____ *Nancy C. Wrona, Director, Air Quality Division*

SIGNATURE TITLE

This minor permit revision provides an express construction schedule for Freeport McMoRan Morenci Inc., the Permittee, to install the fabric filter dust collectors (FFDCs) on conveyor belt transfers DC1 to P8, P2 to P4, P4 to P5, and P5 to P6 as authorized by the renewal of Class I Air Permit No. 42474. This minor permit revision also clarifies that performance testing of the fabric filter dust collectors to demonstrate initial compliance with outlet grain loadings of 0.004 grains per dry standard cubic feet for each dust collector must be conducted within 60 to 180 days of start-up as required by A.A.C. R18-2-312.

The proposed changes would not result in a "significant" emissions increase. The proposed changes satisfy all requirements for a minor permit revision under Arizona Administrative Code, Title 18, Chapter 2, Section 319 (A.A.C. R18-2-319).

ATTACHMENT "B"
Addendum (Minor Revision) to Operating Permit No. 42474 as amended by Minor Permit Revision No. _____
for
Freeport-McMoRan Morenci, Inc.

Condition III.B.2.e. of Attachment "B" is amended to read as follows:

e. Effective eight months from the issuance of this operating permit, *at all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable,* install, maintain, and *operate fabric filter dust collectors for the following: DC1 to P8 (process #001-007), P2 to P4 (process #001-013), P4 to P5 (process #001-014), and P5 to P6 (process #001-015) in a manner consistent with good air pollution control practice for minimizing particulate matter emissions.*
[A.A.C. R 18-2-306.01.A & -331.A.3.d & e]

Condition III.B.4.d. of Attachment "B" is amended to read as follows:

f. The Permittee shall conduct initial performance tests for PM and PM_{10} on the stacks of fabric filter dust collectors listed in Conditions II.B.2.e above within 60 days of achieving the maximum production rate through each transfer point, but no later than 180 days of initial startup. Permittee shall conduct performance tests for PM and PM_{10} on the stacks of fabric filter dust collectors listed in Condition III.B.2.f above in the first year of the permit term. Performance tests shall be conducted following acceptable EPA reference test methods. The performance tests shall be used to demonstrate compliance with the limits in Conditions III.B.1.b.(4). Subsequent tests shall be conducted in the 3rd and 5th year of the permit term.

APPENDIX A

EMISSIONS INFORMATION

EMISSIONS INFORMATION

The four conveyor transfer points are sources of emissions of particulate matter (PM) and particulate matter with nominal aerodynamic diameter of 10 microns or less (PM_{10}). The conveyor transfer points are listed in Table A-1 and shown in Figure A.1.

PTE PM_{10} and PM emission calculations from these four sources are provided in Table A-2. The basis for the PM_{10} and PM emission calculations is presented after Table A-2. Emissions are calculated based on the pollution control assumptions shown in Tables A-1 and A-2.

Table A-1. Affected Conveyor Belt Transfer Points of In-Pit Crusher #3 Conveying System

Process No.	Stack No.	Name (Description)	Pollution Controls
Description Prior to Installation of Fabric Filter Dust Collectors			
007	-	DC1/P8 Conveyor Belt Transfer	assume no controls
013	-	P2/P4 Conveyor Belt Transfer	assume no controls
014	-	P4/P5 Conveyor Belt Transfer	assume no controls
015	-	P5/P6 Conveyor Belt Transfer	assume no controls
Description After Installation of Fabric Filter Dust Collectors			
007	104	DC1/P8 Conveyor Belt Transfer	FFDC
013	105	P2/P4 Conveyor Belt Transfer	FFDC
014	106	P4/P5 Conveyor Belt Transfer	FFDC
015	107	P5/P6 Conveyor Belt Transfer	FFDC

Table A-2. Changes in the Potential to Emit of PM_{10} and PM Prior to and After Installation of Fabric Filter Dust Collectors at the Four Transfer Points

OPERATION ID NO. - PROCESS NO. SOURCE NAME	TRANSFER POINT LOCATIONS			Combined Transfer Rate	Emission Factors		Manufacturers Emission Control Factor	Units	Emission Rates	
	MAXIMUM TRANSFER RATE (tons/hour)				PM_{10}	PM			PM_{10}	PM
Emission Calculations Prior to Installation of the Fabric Filter Dust Collectors										
001-007 DC1 to P8 Transfer P oint	DC1 to P8			tons/hour	lb/ton	lb/ton	None			
Short Duration	7500			7500	0.000110	0.000233	0%	PPH	0.83	1.75
Annual	7500			7500	0.000110	0.000233		TPY	3.45	7.29
001-013 P2/P4 Transfer Point	P2 to P4			tons/hour	lb/ton	lb/ton	None			
Short Duration	7500			7500	0.000110	0.000233	0%	PPH	0.83	1.75
Annual	7500			7500	0.000110	0.000233		TPY	3.45	7.29
001-014 P4/P5 Transfer Point	P4 to P5			tons/hour	lb/ton	lb/ton	None			
Short Duration	7500			7500	0.000110	0.000233	0%	PPH	0.83	1.75
Annual	7500			7500	0.000110	0.000233		TPY	3.45	7.29
001-015 P5/P6 Transfer Point	P5 to P6			tons/hour	lb/ton	lb/ton	None			
Short Duration	7500			7500	0.000110	0.000233	0%	PPH	0.83	1.75
Annual	7500			7500	0.000110	0.000233		TPY	3.45	7.29
							Total Annual Emissions	TPY	**13.79**	**29.16**
Emission Calculations After Installation of the Fabric Filter Dust Collectors										
001-007 DC1 to P8 Transfer P oint	DC1 to P8			tons/hour	grains /dscf	grains /dscf	Fabric Filter Dust Collector			
Short Duration	7500			7500	0.004	0.004	12,800 dscfm	PPH	0.44	0.44
Annual	7500			7500	0.004	0.004		TPY	1.92	1.92
001-013 P2/P4 Transfer Point	P2 to P4			tons/hour	grains /dscf	grains /dscf	Fabric Filter Dust Collector			
Short Duration	7500			7500	0.004	0.004	12,800 dscfm	PPH	0.44	0.44
Annual	7500			7500	0.004	0.004		TPY	1.92	1.92
001-014 P4/P5 Transfer Point	P4 to P5			tons/hour	grains /dscf	grains /dscf	Fabric Filter Dust Collector			
Short Duration	7500			7500	0.004	0.004	12,800 dscfm	PPH	0.44	0.44
Annual	7500			7500	0.004	0.004		TPY	1.92	1.92
001-015 P5/P6 Transfer Point	P5 to P6			tons/hour	grains /dscf	grains /dscf	Fabric Filter Dust Collector			
Short Duration	7500			7500	0.004	0.004	12,800 dscfm	PPH	0.44	0.44
Annual	7500			7500	0.004	0.004		TPY	1.92	1.92
							Total Annual Emissions	TPY	**7.68**	**7.68**
							Change in the Potential to Emit	TPY	**6.11**	**21.48**

Emission Calculations Prior to Installation of Fabric Filter Dust Collectors

PM_{10} and PM emissions prior to installation of the FFDCs were calculated using the emission factor equations in AP-42, Fifth Edition, Section 13.2.4, Aggregate Handling and Storage Piles (see Equation A1). This emission factor equation utilizes site-specific wind speed and moisture content of the process material to provide best estimates of emissions. Justification for this emission factor is presented later in this Appendix.

$$EF\ (lb/ton) = k(0.0032)\frac{(U/5)^{1.3}}{(M/2)^{1.4}} \qquad \textbf{(A1)}$$

Where: EF = Uncontrolled emission factor (lb/ton)

k = particle size multiplier (dimensionless)

U = mean wind speed (mph)

M = material moisture content (%)

The particle size multipliers, mean wind speed and material moisture content used in this application within the above emission factor equation were as follows:

k = 0.74 for PM; 0.35 for PM_{10}

U = 1.3 mph (lowest range of wind speed allowed by Section 13.2.4 without reducing the "A" rating of the emission factor. All transfer points are enclosed by chutes and shrouds. Consequently, the actual wind speed should be less than 1.3 mph)

M = 3.0 % (average moisture content of the ore)

Application of this information results in PM_{10} and PM emission factors of 0.000110 and 0.000233 lb/ton (respectively). Hourly emissions were calculated using these factors and the maximum IPC #1 process rate of 7,500 tons/hour. Annual emissions were calculated based upon the crushing process rate limit of 62,580,000 tons/year (see Attachment "B", Permit Condition II.B.1)

Emission Calculations After Installation of Fabric Filter Dust Collectors

Emissions from the fabric filter dust collector capturing emissions from each transfer point were calculated using the dust collector design flow rate of 12,800 dscfm, the voluntarily accepted outlet grain loading limit of 0.004 grains/dscf for both PM and PM_{10}, and continuous operation as follows:

$$E\ (lb/hr) = EF_C\ Q_C\ \frac{1\ lb}{7000\ grains}\ \frac{60\ minutes}{hour} \qquad \textbf{(A2)}$$

$$E\ (tons/year) = EF_C\ Q_C\ H\ \frac{1\ lb}{7000\ grains}\ \frac{60\ minutes}{hour}\ \frac{1\ ton}{2000\ lb} \qquad \textbf{(A3)}$$

Where: E = Emissions (lb/hr or tons/year)

EF_C = Controlled emission factor (0.004 grains/dry standard cubic feet)

Q_C = Air flow rate exiting the FFDC (dry standard cubic feet per minute)

H = Equals 8,760 hours for this permit application for estimating annual emissions

Justification for Use of AP-42, Section 13.2.4

Emission factors for material transfer processes appear in various sections of AP-42 for various materials. In general these factors are numerical values that are based upon a number of measurements and do not consider site-specific parameters. FMMI has historically used the following material transfer emission factors in AP-42 Section 11.24 for metallic mineral processing that was developed in 1982:

1. Low Moisture Ore (< 4% moisture by weight):

   PM = 0.12 lb/ton process material

   PM_{10} = 0.06 lb/ton process material

2. High Moisture Ore (≥ 4% Moisture by weight)

   PM = 0.01 lb/ton process material

   PM_{10} = 0.004 lb/ton process material

The above emission factors have a quality rating of "C" and exhibit a discontinuity at a moisture content of 4% where the emission factors for low moisture and high moisture ore change by factors of 12 for PM and 15 for PM_{10}. This discontinuity is a reflection of the segregation of the sample data that was used in developing emission factors for each moisture range. Consideration of more finite ranges of moisture content should have deleted this disconnect. This discontinuity also demonstrates some of the inaccuracies associated with emission factors that do not consider site-specific conditions.

A more universal material transfer emission factor that includes site-specific conditions is found in AP-42 Section 13.2.4 as presented in Equation A.1 above. This emission factor was most recently reviewed in 2006, has an "A" rating (i.e., the highest given by AP-42), and incorporates site-specific moisture conditions of the process material and the wind speed affecting the process material in the emission factor. Because this emission factor has been more recently developed, it is based upon a greater data base than previous emission factors such as AP-42 Section 11.24. Section 13.2.4 states that the "A" rating applies for process materials with silt, moisture, and wind speed in the following ranges: 0.44 – 19% for silt content, 0.25 – 4.8% for moisture, and 1.3 – 15 miles/hour for wind speed. The silt and moisture content of ore at FMMI are generally within the mid-range of these parameters. The wind speed varies with the location and process. Process materials with characteristics or subject to wind speeds outside of these values would reduce the letter rating of the emission factor.

Because of the above considerations, the emission factor in AP-42 Section 13.2.4 is considered the more representative emission factor, and was thus used to calculate emissions from the FMMI conveyor belt transfers. Supporting documentation of the more universal applicability of the AP-42 Section 13.2.4 emission factor is provided by AP-42 Section 11.9-4 (Western Surface Coal Mining) which cites Equation A.1 as a "single dust-generating mechanism that crosses industry lines".

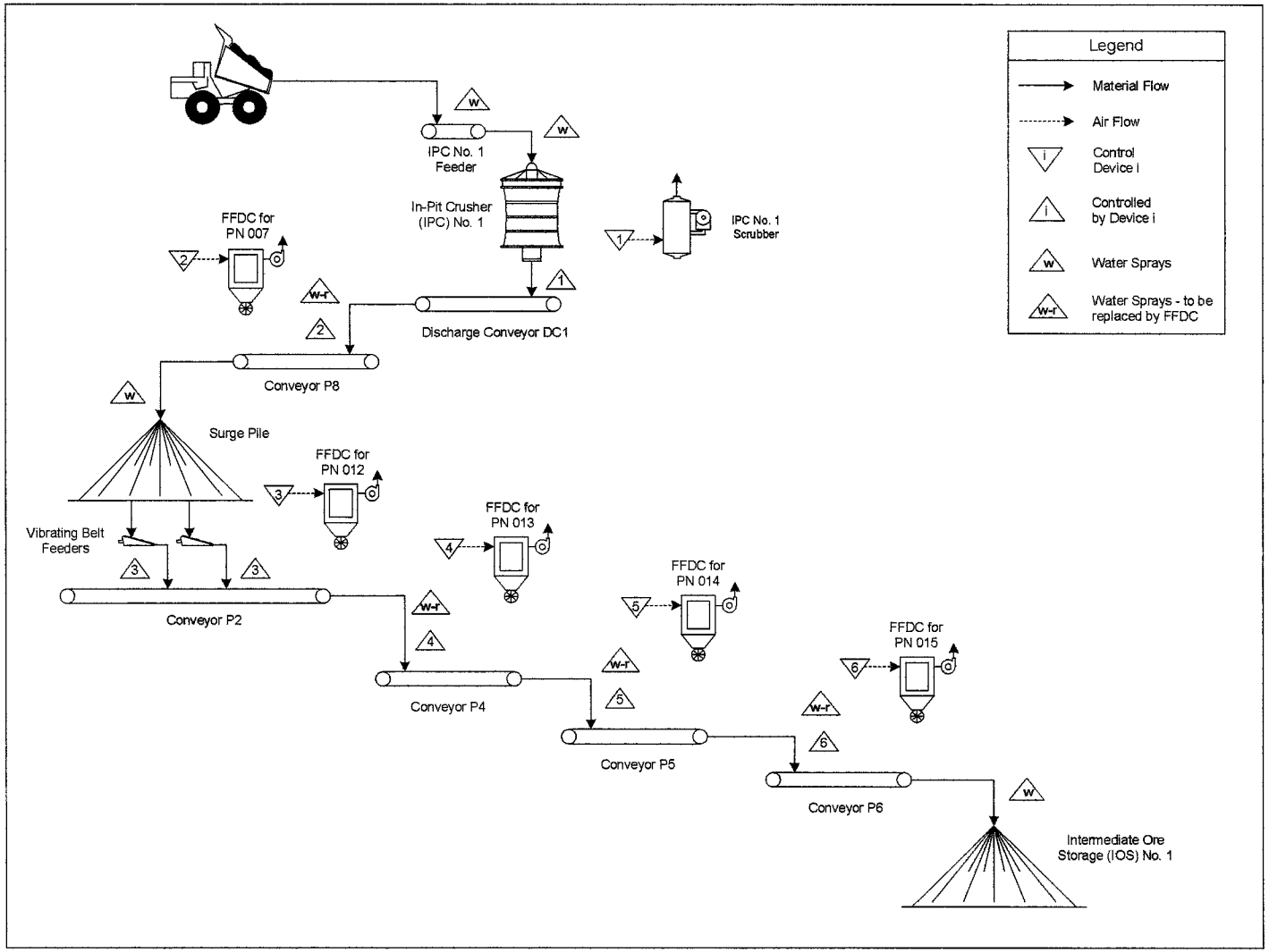


Figure A.1. Process Flow Diagram of IPC #1 and Conveying System to IOS No. 1 Showing Existing Water Sprays and Planned Fabric Filter Dust Collectors