



**TABLE OF CONTENTS**  
**Revised February 3, 2009**

<b>1.0</b>	<b>INTRODUCTION</b>	<b>1-1</b>
1.1	FACILITY OVERVIEW	1-1
1.2	FACILITY LOCATION	1-2
1.3	APPLICATION SUMMARY	1-2
<b>2.0</b>	<b>PROCESS DESCRIPTION</b>	<b>2-1</b>
2.1	ASCPC COAL BOILER AND STEAM TURBINE	2-1
2.2	COAL SPECIFICATIONS	2-2
2.3	PLANT CONFIGURATION	2-4
2.4	AIR QUALITY CONTROL SYSTEM (AQCS)	2-4
2.5	COOLING TOWER	2-5
2.6	ANCILLARY EQUIPMENT	2-6
2.7	MATERIAL HANDLING	2-6
	2.7.1 Coal Handling	2-6
	2.7.2 Limestone Handling	2-8
<b>3.0</b>	<b>SUMMARY OF EMISSION CALCULATIONS</b>	<b>3-1</b>
3.1	ADVANCED SUPER CRITICAL, PULVERIZED COAL FIRED BOILER	3-1
	3.1.1 Particulate Matter (PM/PM <sub>10</sub> /PM <sub>2.5</sub> )	3-2
	3.1.2 Sulfur Dioxide (SO <sub>2</sub> )	3-4
	3.1.3 Nitrogen Oxides (NO <sub>x</sub> )	3-5
	3.1.4 Carbon Monoxide (CO)	3-7
	3.1.5 Volatile Organic Compounds (VOC)	3-8
	3.1.6 Lead (Pb)	3-9
	3.1.7 Sulfuric Acid Mist (H <sub>2</sub> SO <sub>4</sub> )	3-11
	3.1.8 Fluorides (as HF)	3-12
	3.1.9 Hydrogen Chloride	3-15
	3.1.10 Total Reduced Sulfur (TRS), including Hydrogen Sulfide (H <sub>2</sub> S)	3-17
	3.1.11 Mercury Emissions	3-17
	3.1.11 HAP AND TAC Emissions	3-20
3.2	AUXILIARY BOILER	3-22
	3.2.1 Emissions Calculations	3-23
	3.2.2 Proposed Limit	3-24
	3.2.3 Compliance Method	3-24
3.3	EMERGENCY GENERATOR (AND OTHER DIESEL-FIRED EQUIPMENT)	3-24
	3.3.1 Emissions Calculations	3-25
	3.3.2 Proposed Limit	3-28
	3.3.3 Compliance Method	3-28
3.4	MATERIAL HANDLING	3-28



## TABLE OF CONTENTS (Continued)

Revised January 20, 2009

3.4.1	Coal Handling Emission Sources	3-28
3.4.2	Limestone Handling Emission Sources	3-34
3.4.3	Ash Storage Emissions	3-36
3.4.4	Truck Hauling Emissions	3-37
3.4.5	Additional Storage Silos	3-41
3.5	COOLING TOWER	3-42
3.6	SUMMARY OF EMISSIONS	3-43
4.0	SUMMARY OF APPLICABLE REQUIREMENTS	4-1
4.1	FEDERAL REQUIREMENTS	4-1
4.1.1	National Ambient Air Quality Standards	4-1
4.1.2	Prevention of Significant Deterioration (PSD)	4-2
4.1.3	New Source Performance Standard (NSPS)	4-6
4.1.4	National Emission Standards for Hazardous Air Pollutants (NESHAPs)	4-10
4.1.5	Clean Air Interstate Rule (CAIR)	4-12
4.1.6	Clean Air Mercury Rule (CAMR)	4-13
4.1.7	Compliance Assurance Monitoring	4-14
4.1.8	Federal Acid Rain Program	4-15
4.1.9	Prevention of Accidental Releases	4-15
4.2	MICHIGAN-SPECIFIC REQUIREMENTS	4-16
4.2.1	Air Use permit (Permit-to-Install)	4-16
4.2.2	Toxic Air Contaminants (TACs)	4-17
4.2.3	Standards for Density of Emissions and Particulate Emissions	4-18
4.2.4	Emission Limitations and Prohibitions – Sulfur-Bearing Compounds	4-18
4.2.5	Emission Limitations and Prohibitions – New Sources of VOC Emissions	4-19
4.2.6	Emission Limitations and Prohibitions – Oxides of Nitrogen	4-19
5.0	CONTROL TECHNOLOGY REVIEW	5-1
5.1	BEST AVAILABLE CONTROL TECHNOLOGY (BACT)	5-1
5.1.1	Startup, Shutdown, and Malfunction	5-4
5.2	ASCPC BOILER BACT EVALUATION	5-6
5.2.1	Particulate Matter (PM, PM <sub>10</sub> , PM <sub>2.5</sub> )	5-6
5.2.2	Sulfur Dioxide (SO <sub>x</sub> )	5-12
5.2.3	Nitrogen Oxides (NO <sub>x</sub> )	5-23
5.2.4	Carbon Monoxide (CO)	5-32
5.2.5	Volatile Organic Compounds	5-37
5.2.6	Sulfuric Acid Mist (H <sub>2</sub> SO <sub>4</sub> )	5-39
5.2.7	Fluorides (as HF)	5-45
5.2.8	Summary of Proposed BACT Limits for the ASCPC Boiler	5-48



**TABLE OF CONTENTS (Continued)**  
**Revised January 20, 2009**

<b>5.3</b>	<b>AUXILIARY BOILER</b>	<b>5-49</b>
5.3.1	Particulate Matter (PM <sub>10</sub> /PM <sub>2.5</sub> )	5-49
5.3.2	Sulfur Dioxide (SO <sub>2</sub> )	5-50
5.3.3	Oxides of Nitrogen (NO <sub>x</sub> )	5-50
5.3.4	Carbon Monoxide (CO)	5-53
5.3.5	Volatile Organic Compounds (VOC)	5-53
5.3.6	Acid Gases (H <sub>2</sub> , SO <sub>4</sub> , HF, TRS)	5-54
5.3.7	Summary of Proposed BACT Limits for the Auxiliary Boiler	5-54
<b>5.4</b>	<b>EMERGENCY GENERATOR</b>	<b>5-55</b>
5.4.1	Possible Control Technologies	5-55
5.4.2	Proposed BACT for Emergency Engines	5-56
<b>5.5</b>	<b>FIRE PUMP AND WET FGD QUENCY PUMP ENGINES</b>	<b>5-65</b>
<b>5.6</b>	<b>FIRE BOOSTER PUMP ENGINE</b>	<b>5-72</b>
<b>5.7</b>	<b>COOLING TOWERS</b>	<b>5-78</b>
<b>5.8</b>	<b>MATERIAL HANDLING</b>	<b>5-78</b>
5.8.1	Non-Fugitive Emissions	5-78
5.8.2	Fugitive Emissions	5-82
<b>5.9</b>	<b>BEST AVAILABLE CONTROL TECHNOLOGY FOR TOXICS (T-BACT)</b>	<b>5-86</b>
5.9.1	Mercury (Hg)	5-88
5.9.2	Other TACs	5-91
<b>6.0</b>	<b>AMBIENT IMPACT ANALYSIS</b>	<b>6-1</b>
<b>6.1</b>	<b>MODELING BACKGROUND</b>	<b>6-2</b>
<b>6.2</b>	<b>MODELING METHODOLOGY</b>	<b>6-4</b>
6.2.1	Terrain Considerations (AERMAP)	6-6
6.2.2	Receptor Grids	6-8
6.2.3	Meteorological Data	6-10
6.2.4	Rural Vs. Urban Dispersion Options	6-11
6.2.5	Wake and Cavity Effects (Downwash)	6-12
<b>6.3</b>	<b>MODELED EMISSION RATES</b>	<b>6-15</b>
6.3.1	Nitrogen Oxides (NO <sub>x</sub> )	6-15
6.3.2	Sulfur Dioxide (SO <sub>2</sub> )	6-16
6.3.3	Carbon Monoxide (CO)	6-17
6.3.4	Particulate Matter (PM <sub>10</sub> )	6-18
6.3.5	Toxic Air Contaminants	6-21
<b>6.4</b>	<b>EXHAUST AND RELEASE PARAMETERS</b>	<b>6-23</b>
6.4.1	Area and Volume Source Discussion	6-23
6.4.2	Existing Stacks Requiring Increased Heights	6-27
<b>6.5</b>	<b>ADDITIONAL SOURCE LISTING</b>	<b>6-27</b>



**TABLE OF CONTENTS (Continued)**  
**Revised January 20, 2009**

<b>6.6</b>	<b>BACKGROUND CONCENTRATIONS</b>	<b>6-28</b>
<b>6.7</b>	<b>AMBIENT IMPACT ANALYSIS RESULTS</b>	<b>6-29</b>
6.7.1	Nitrogen Oxides (NO <sub>x</sub> ) Results	6-29
6.7.2	Sulfur Dioxide (SO <sub>2</sub> )	6-30
6.7.3	Carbon Monoxide (CO)	6-31
6.7.4	Particulate Matter (PM <sub>10</sub> )	6-31
6.7.5	Toxic Air Contaminants (TAC) Analysis	6-36
<b>6.8</b>	<b>DISPERSION MODELING FILES</b>	<b>6-37</b>
<b>7.0</b>	<b>DEPOSITION MODELING ANALYSIS</b>	<b>7-1</b>
<b>7.1</b>	<b>SOURCES INCLUDED IN DEPOSITION MODELING</b>	<b>7-1</b>
7.1.1	Mercury and Lead Emissions	7-1
<b>7.2</b>	<b>DEPOSITION RECEPTOR GRIDS</b>	<b>7-2</b>
7.2.1	Mercury	7-2
7.2.2	Lead	7-3
<b>7.3</b>	<b>DEPOSITION MODELING DESCRIPTION</b>	<b>7-4</b>
7.3.1	Mercury Partitioning	7-4
7.3.2	Gas Dry Deposition – Control Pathway Parameters for Mercury	7-5
7.3.3	Gas Dry Deposition – Source Pathway Parameters for Mercury	7-6
7.3.4	Particulate Aerodynamic Distribution – Source Pathway Parameters (Hg & Pb)	7-7
7.3.5	Seasonal and Land Use Categories (Gas Dry Deposition) – Control Path Parameters	7-12
<b>7.4</b>	<b>MODEL OUTPUT</b>	<b>7-12</b>
<b>7.5</b>	<b>DEPOSITION MODELING FILES</b>	<b>7-13</b>
<b>8.0</b>	<b>HUMAN HEALTH RISK ASSESSMENT SUMMARY AND CONCLUSIONS</b>	<b>8-1</b>
<b>9.0</b>	<b>ADDITIONAL IMPACT ANALYSIS</b>	<b>9-1</b>
<b>9.1</b>	<b>CONSTRUCTION IMPACTS</b>	<b>9-1</b>
<b>9.2</b>	<b>ASSOCIATED GROWTH</b>	<b>9-2</b>
9.2.1	Industrial Growth	9-3
9.2.2	Commercial Growth	9-3
9.2.3	Residential Growth	9-4
<b>9.3</b>	<b>SOILS, VEGETATION, AND WILDLIFE</b>	<b>9-4</b>
<b>9.4</b>	<b>VISIBILITY</b>	<b>9-5</b>
<b>9.5</b>	<b>THREATENED AND ENDANGERED SPECIES</b>	<b>9-6</b>



**TABLE OF CONTENTS (Continued)**  
**Revised January 20, 2009**

**APPENDICES**

<b>SITE DRAWINGS</b>	<b>A</b>
<b>EMISSION CALCULATIONS</b>	<b>B</b>
<b>PROCESS DRAWINGS</b>	<b>C</b>
<b>BEST AVAILABLE CONTROL TECHNOLOGY</b>	<b>D</b>
<b>AMBIENT IMPACT SUPPORT INFORMATION</b>	<b>E</b>
<b>DEPOSITION MODELING SUPPORT INFORMATION</b>	<b>F</b>
<b>AMBIENT IMPACT AND DEPOSITION MODELING DISCS</b>	<b>G</b>
<b>HUMAN HEALTH RISK ASSESSMENT</b>	<b>H</b>
<b>TECHNOLOGY ASSESSMENT</b>	<b>I</b>
<b>MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY- ASCPC UNIT</b>	<b>J</b>
<b>MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY – AUXILIARY BOILER</b>	<b>K</b>

**FIGURES**

Figure 1-1	ASCPC Site Location	1-4
Figure 2-1	Typical Supercritical Coal-fired Boiler	2-11
Figure 2-2	Flue Gas Flow Path	2-12
Figure 6-1	Karn/Weadock Generating Station	6-7

**TABLES**

Table 2-1	Air Permitting Coal Specifications	2-5
Table 3-1	Pollutant Emission Rates from the New Equipment	3-2
Table 3-2	ProUCL Results for Lead Content of Western Coal	3-9
Table 3-3	ProUCL Results for Lead Content of Eastern Coal	3-10
Table 3-4	Annual Lead Emission Factors	3-10
Table 3-5	ProUCL Results for Fluorine Content of Western Coal	3-13
Table 3-6	ProUCL Results for Fluorine Content of Eastern Coal	3-13
Table 3-7	Summary of Short- and Long-Term Emission Factors as Fluorine	3-14
Table 3-8	Summary of Short- and Long-Term Emission Factors as Hydrogen Fluoride	3-14
Table 3-9	Summary of Short-term and Long-Term Emission Rates for Chlorine	3-15
Table 3-10	Summary of Short-term and Long-Term Emission Factors as HCl	3-16
Table 3-11	ProUCL Results for Mercury	3-19
Table 3-12	Pollutant Emission Rates and Proposed Limits for the Auxiliary Boiler	3-23
Table 3-13	Diesel-Fired Equipment Ratings	3-25
Table 3-14	NSPS, Subpart III Emissions Limits	3-26
Table 3-15	Applicable Emission Factor for Diesel-fired Engines	3-27
Table 3-16	Potential PSD-Regulated Pollutant Emission Rates from the Diesel-Fired Equipment	3-27
Table 3-17	Summary of the Wind Erosion from the Coal Piles	3-31
Table 3-18	Summary of the Coal Handling Operations for Coal Delivered by Rail	3-34
Table 3-19	Summary of the Limestone Handling Operations	3-36
Table 3-20	Vehicle Traffic on the Unpaved Portion of the Ash Haul Road	3-38
Table 3-21	Summary of Fugitive Emissions from Unpaved Roads	3-39
Table 3-22	Vehicle Traffic on the Paved Portion of the Main Access Road	3-40
Table 3-23	Summary of Fugitive Emissions from Paved Roads	3-41
Table 3-24	Summary of Emissions from the Additional Storage Silos	3-42
Table 3-25	Cooling Tower Particulate Emissions	3-43



## TABLE OF CONTENTS (Continued)

Revised January 20, 2009

Table 3-26	Summary of Emissions from the ASCPC Boiler and Related Operations	3-44
Table 4-1	National Ambient Air Quality Standards (NAAQS)	4-2
Table 4-2	Potential Emissions as a Result of Proposed Installation	4-4
Table 4-3	Summary of NSPS, Subpart Da Emission Standards	4-7
Table 4-4	Summary of NSPS, Subpart Db Emission Standards	4-8
Table 4-5	Proposed CI ICE Engines	4-9
Table 4-6	Summary of NSPS, Subpart OOO Emission Standards	4-10
Table 5-1	Ranking of PM/PM <sub>10</sub> Control Technologies	5-10
Table 5-2	Summary of PM/PM <sub>10</sub> BACT Limits for New and Proposed PC Boilers	5-11
Table 5-3	Ranking of SO <sub>2</sub> Control Technologies	5-21
Table 5-4	Summary of SO <sub>2</sub> BACT Limits for New and Proposed PC Boilers	5-22
Table 5-5	Summary of NO <sub>x</sub> BACT Limits for New and Proposed PC Boilers	5-31
Table 5-6	Summary of CO BACT Limits for New and Proposed PC Boilers	5-35
Table 5-7	Summary of VOC BACT Limits for New and Proposed PC Boilers	5-38
Table 5-8	Ranking of SO <sub>3</sub> Control Technologies	5-42
Table 5-9	Summary of H <sub>2</sub> SO <sub>4</sub> BACT Limits for New and Proposed PC Boilers	5-44
Table 5-10	Summary of HF BACT Limits for New and Proposed PC Boilers	5-47
Table 5-11	Summary of Proposed BACT Limits for ASCPC Boiler	5-48
Table 5-12	Summary of Proposed BACT/MACT Limits for Auxiliary Boiler	5-54
Table 5-13	Summary of PM/PM <sub>10</sub> BACT Limits for Emergency Generators >1,000 hp	5-58
Table 5-14	Summary of SO <sub>2</sub> BACT limits for Emergency Generators >1,000 hp	5-60
Table 5-15	Summary of NO <sub>x</sub> BACT limits for Emergency Generators >1,000 hp	5-61
Table 5-16	Summary of CO BACT limits for Emergency Generators >1,000 hp	5-62
Table 5-17	Summary of VOC BACT limits for Emergency Generators >1,000 hp	5-64
Table 5-18	Summary of NO <sub>x</sub> + NMHC limits for Emergency Generators >1,000 hp	5-64
Table 5-19	Summary of PM/PM <sub>10</sub> BACT limits for Emergency Generators ~500 hp	5-66
Table 5-20	Summary of SO <sub>2</sub> BACT limits for Emergency Generators ~500 hp	5-67
Table 5-21	Summary of NO <sub>x</sub> BACT limits for Emergency Generators ~500 hp	5-68
Table 5-22	Summary of CO BACT limits for Emergency Generators ~500 hp	5-69
Table 5-23	Summary of VOC BACT limits for Emergency Generators ~500 hp	5-70
Table 5-24	Summary of NO <sub>x</sub> + NMHC limits for Emergency Generators ~500 hp	5-71
Table 5-25	Summary of PM/PM <sub>10</sub> BACT limits for Emergency Engines of the Same Size	5-73
Table 5-26	Summary of PM/PM <sub>10</sub> BACT limits for Small Emergency Engines	5-74
Table 5-27	Summary of NO <sub>x</sub> BACT limits for Small Emergency Engines	5-74
Table 5-28	Summary of CO BACT limits for Small Emergency Engines	5-76
Table 5-29	Summary of VOC BACT limits for Small Emergency Engines	5-77
Table 5-30	Summary of NO <sub>x</sub> + NMHC Limits for Small Emergency Engines	5-77
Table 5-31	Annual Emissions from the Enclosed Piles (tpy)	5-81
Table 5-32	Cost Effectiveness of Fabric Filters on Large Storage Facilities	5-81
Table 5-33	Selected BACT for PM/PM <sub>10</sub> Emissions from Material Handling Operations	5-85
Table 6-1	Significant Impact level (SIL) for Criteria Pollutants	6-4
Table 6-2	PSD Allowable Increments	6-5
Table 6-3	National Ambient Air Quality Standards	6-5
Table 6-4	NO <sub>x</sub> Emission Rates from the Proposed New Boilers	6-16
Table 6-5	SO <sub>2</sub> Emission Rates from the Proposed New Boilers	6-17
Table 6-6	CO Emission Rates from the Proposed New Boilers	6-18
Table 6-7	NAAQS Offsite Source of PM <sub>10</sub>	6-28
Table 6-8	PM <sub>10</sub> Background Concentrations for NAAQS	6-29
Table 6-9	Results of the NO <sub>x</sub> SIL Modeling Analysis (02 – 06 MBS MET)	6-30
Table 6-10	Results of the SO <sub>2</sub> SIL Modeling Analysis (02 – 06 MBS MET)	6-30
Table 6-11	Results of the CO SIL Modeling Analysis (02 – 06 MBS MET)	6-31
Table 6-12	Results of CEC PM <sub>10</sub> 80% Increment Modeling (03 – 07 MBS MET)	6-32
Table 6-13	Results of the CEC PM <sub>10</sub> 100% Increment Modeling (03 – 07 MBS MET)	6-33
Table 6-14	Results of the CEC PM <sub>10</sub> NAAQS Modeling Analysis (03 – 07 MBS MET Data)	6-34
Table 6-15	Summary of the CEC Karn/Weadock Modeling Files	6-37



**TABLE OF CONTENTS (Continued)**  
**Revised January 20, 2009**

<b>Table 7-1</b>	<b>Modeled Emission Rates for Deposition</b>	<b>7-2</b>
<b>Table 7-2</b>	<b>Summary of Speciated Mercury Emission Rates for Coal-Fired Boilers</b>	<b>7-4</b>
<b>Table 7-3</b>	<b>Summary of Modeled Mercury Emission Rates for ASCPC Boiler</b>	<b>7-5</b>
<b>Table 7-4</b>	<b>Summary of Dry Gas Deposition Control Pathway Parameters</b>	<b>7-6</b>
<b>Table 7-5</b>	<b>Summary of Gas Deposition Source Pathway Parameters</b>	<b>7-7</b>
<b>Table 7-6</b>	<b>Summary of Particle Size Distribution for ASCPC Boiler</b>	<b>7-9</b>
<b>Table 7-7</b>	<b>Surface Area Weighting of Mass Fractions for Particle-Bound Mercury Modeling for the ASCPC Boiler (based on Baghouse Control)</b>	<b>7-11</b>
<b>Table 7-8</b>	<b>Summary of the Deposition Modeling Files</b>	<b>7-13</b>
<b>APPENDIX B</b>	<b>EMISSION CALCULATIONS</b>	
<b>Table B-1</b>	<b>ASCPC Project Emissions Summary</b>	
<b>Table B-2</b>	<b>ASCPC Boiler Emission Estimates</b>	
<b>Table B-3</b>	<b>Auxiliary Boiler Emission Estimates</b>	
<b>Table B-4</b>	<b>Diesel-fired Engines Emission Estimates</b>	
<b>Table B-5</b>	<b>Coal Handling</b>	
<b>Table B-6</b>	<b>Limestone Handling</b>	
<b>Table B-7</b>	<b>Misc. Sources</b>	
<b>Table B-8</b>	<b>Fugitives (Roads)</b>	
<b>Table B-9</b>	<b>Reserve Storage Pile</b>	
<b>Table B-10</b>	<b>ProUCL Results</b>	
<b>Table B-11</b>	<b>10-gallon Diesel Storage Tank</b>	
<b>APPENDIX E</b>	<b>AMBIENT IMPACT SUPPORT INFORMATION</b>	
<b>Table E-1</b>	<b>New Point Source Emission Rates</b>	
<b>Table E-2</b>	<b>PSD and NAAQS PM10 Modeling Emission Rates for New Fugitive and Coal Handling Activities</b>	
<b>Table E-3</b>	<b>Existing Point Source Emission Rates</b>	
<b>Table E-4</b>	<b>NAAQS PM10 Modeling Emission Rates and Parameters for Existing Fugitive and Coal Handling Activities</b>	
<b>Table E-5A</b>	<b>PSD Roads</b>	
<b>Table E-5B</b>	<b>NAAQS Roads</b>	
<b>Table E-6A</b>	<b>LINE Source Input for PSD Roads</b>	
<b>Table E-6B</b>	<b>LINE Source Input for NAAQS Roads</b>	
<b>Table E-7</b>	<b>Criteria Pollutant Impact Summary</b>	
<b>Table E-8</b>	<b>Emission Estimates and TAC Analysis ASCPC and Aux Boilers with Diesel-fired Engines</b>	
<b>Table E-9A</b>	<b>PM10 PSD and NAAQS Modeling Parameters-Point</b>	
<b>Table E-9B</b>	<b>PM10 PSD and NAAQS Modeling Parameters-Area (Polygon)</b>	
<b>Table E-9C</b>	<b>PM10 PSD and NAAQS Modeling Parameters-Area (Circle)</b>	
<b>Table E-9D</b>	<b>PM10 PSD and NAAQS Modeling Parameters-Volume</b>	
<b>Table E-10</b>	<b>Existing Coal Handling</b>	
<b>Table E-11</b>	<b>Existing Coal Piles</b>	



**TABLE OF CONTENTS (Continued)**  
**Revised January 20, 2009**

**ACRONYMS**

Acfm	actual cubic foot per minute
ACI	Activated Carbon Injection
AERMIC	<u>A</u> MS/ <u>E</u> PA <u>R</u> egulatory <u>M</u> odel <u>I</u> mprovement <u>C</u> ommittee
AERMOD	AERMIC Model
AERMAP	pre-processor AERMOD elevation data
AERMET	pre-processor AERMOD meteorological data
AP-42	Compilation of air pollution emission factors
AQCS	Air Quality Control System
AQD	Air Quality Division
ASCPC	Advanced Supercritical Pulverized Coal
BACT	Best Available Control Technology
BPIP	Building Profile Input Program
Btu/lb	British Thermal Units per pound
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAIR	Clean Air Interstate Rule
CAM	Compliance Assurance Monitoring
CAMR	Clean Air Mercury Rule
CAPs	Mercury Budget Permits
Ca(OH) <sub>2</sub>	Hydrated lime
CaSO <sub>3</sub>	calcium sulfite
CaSO <sub>4</sub>	calcium sulfate
CDC	Centers for Disease Control
CEMS	Continuous Emission Monitoring System
CFB	Circulating Fluid Bed
CFR	Code of Federal Regulations
CI	Compression Ignition
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
COMS	Continuous Opacity Monitoring System
Consumers	Consumers Energy Company
CTC	Control Technology Center
DEM	Digital Elevation Models
ECO	Electro-Catalytic Oxidation
EGU	Electrical Generating Unit
ESP	Electrostatic Precipitator
ESGU	Electrical Steam Generating Unit
FD	Forced Draft
FGD	Flue Gas Desulfurization
FGR	Flue Gas Recirculation
GAQM	USEPA's Guideline on Air Quality Models
gal	gallons



**TABLE OF CONTENTS (Continued)**  
**Revised January 20, 2009**

GEP	Good Engineering Practice (stack height)
g/sec	grams per second
gr/dscf	grains per dry standard cubic foot
GWh	Gigawatt hour
H <sub>2</sub> O	Water
H <sub>2</sub> S	hydrogen sulfide
H <sub>2</sub> SO <sub>4</sub>	sulfuric acid
HAP	Hazardous Air Pollutant
HC	Hydrocarbons
HCl	Hydrogen Chloride
HF	Hydrogen Fluoride
Hg	Mercury
HHRA	Human Health Risk Assessment
HHV	Higher Heating Value
HI	Hazard Index
HP	horse power
HR	Heat Release
ICE	Internal Combustion Engine
IEUBK	Integrated Exposure Uptake Biokinetic Model
ITSL	Initial Threshold Screening Level
IRSL	Initial Risk Screening Level
km	kilometer
kW	kilowatt
kWh	kilowatt hour
LAER	Lowest Achievable Emission Rate
LAI	Leaf Area Index
lb/GWh	pounds per gigawatt hour
lb/hr	pound per hour
lb/MMBtu/hr	pounds per million British Thermal Units
lb/MWh	pounds per megawatt hour
L/G	Liquid to Gas ratio
LHV	Lower Heating Value
LNBS	Low NO <sub>x</sub> Burners
LSFO	Limestone Force Oxidation
LSIO	Limestone Inhibited Oxidation
m	meter
MACT	Maximum Achievable Control Technology
MBS	Midland/Bay City/Saginaw (MBS) International Airport
MDEQ	Michigan Department of Environmental Quality
MEL	Magnesium Enhanced Lime
MET	Actual Surface Meteorological data
MMBtu	million British Thermal Units
MMBtu/hr	million British Thermal Units per hour



**TABLE OF CONTENTS (Continued)**  
**Revised January 20, 2009**

MMscf	million standard cubic feet
MWh	megawatt hour
MWh	megawatts
NAAQS	National Ambient Air Quality Standards
Na <sub>2</sub> SO <sub>3</sub>	sodium sulfite
Na <sub>2</sub> SO <sub>4</sub>	sodium sulfate
NANSR	Non-Attainment New Source Review
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NH <sub>3</sub>	Ammonia
NMHC	Non Methane Hydrocarbons
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>x</sub>	Nitrogen oxides
NSPS	Standards of Performance for New Stationary Sources
NSR	New Source Review
O <sub>2</sub>	Oxygen
OFA	Overfire Air
PAC	Powered Activated Carbon
Pb	Lead
PC	Pulverized Coal
PEMS	parametric monitoring system
PM	Particulate Matter
PM <sub>10</sub>	Particulate matter with mean aerodynamic diameter below 10 microns.
PM <sub>2.5</sub>	Particulate matter with mean aerodynamic diameter below 2.5 microns.
POMs	polycyclic organic matter
ppm	parts per million
ppmw or ppm <sub>wet</sub>	parts per million wet
PRB	Powder River Basin
PRIME	Plume Rise Model Enhancements
PSD	Prevention of Significant Deterioration
Psig	Pound per square inch gauge
PTI	Permit to Install
RACT	Reasonably Available Control Technology
RBLC	RACT/BACT/LAER Clearing House
RfC	Reference Concentration
RfD	Reference dose
RICE	Reciprocating Internal Combustion Engine
RMP	Risk Management Plan
ROP	Renewable Operating Permit
RTO	Regenerative Thermal Oxidizer
RSC	reduce sulfur compounds
S	Sulfur
SAM	Sulfuric Acid Mist



**TABLE OF CONTENTS (Continued)**  
**Revised January 20, 2009**

scf	standard cubic foot
SCPC	Supercritical Pulverized Coal
SCR	Selective Catalytic Reduction
SIL	Significant Impact Level
SIP	State Implementation Plan
SNCR	Selective Non-Catalytic Reduction
SO <sub>x</sub>	Sulfur oxides
SO <sub>2</sub>	sulfur dioxide
SO <sub>3</sub>	sulfur trioxide
SRN	SRN – State Registration Number
TAC	Toxic Air Contaminant
T-BACT	Best Available Control Technology for Toxics
TDS	total dissolved solids
TRS	total reduce sulfur
TT	Transfer Tower
tpy	tons per year
UCL	Upper Confidence Level
µg/m <sub>3</sub>	micrograms per cubic meter
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VMT	vehicle miles traveled