Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

AQDMPS-01

Air Quality Dispersion Modeling (AQDM) Protocol Spreadsheet

Protocol Form for Criteria Pollutant Modeling

Doc Type: Air Dispersion Modeling

AQ Facility ID No:	
Facility Name:	
Facility Address:	
Facility Contact:	

Model Input Key

Parameters	Units			Description
Permit ID		ID given in Permit or contact MPCA permit engineer		
AERMOD ID		3-character facility ID plus Stack Vent or POINT source ID used in Modeling (up to 8 characters), e.g. FACSV001		
Pollutant		Criteria pollutant modeled, PM2.5, PM10, SO2, NO2, CO, Pb, O3		
Averaging Time		Modeling Period for pollutant, 1-HR, 24-HR, Annual, etc.		
Operating Scenario	[#]	A number indicating the operating condition, described in the Emission Calculations tab, for which the emission rate will be modeled.		
Base_Elev =	[m]	Source base elevation above mean sea level		
Height =	[m]	Release height above ground		
Diam =	[m]	Stack diameter or equivalent diameter		
Exit_Vel =	[m/s]	Exit velocity		
Exit_Temp =	[K]	Exit temperature (POINT only)		
Release Type =		VERTICAL, HORIZONTAL, CAPPED (POINT only) - HORIZONTAL and CAPPED are non-default beta options		
Emission_Rate =	[g/s]	Emission rate (g/s)		
X and Y	[m]	Stack Coordinates in UTM NAD83, zone 15 extended		
Desc =		Stack description (boiler, furnace, etc)		

SRCPARAM

												Easting	Northing	
Permit ID	AERMOD ID	Pollutant	Averaging Time	Operating Scenario #	Base_Elev [m]	Height [m]	Diam [m]	Exit_Vel [m/s]	Exit_Temp [K]	Release_Type	Emission_Rate (g/sec)	Emission_Rate (lb/hr)	X1 [m]	Y1 [m]	DESC
EU001	FACSV001	NO2	1-hr	1	450.31	48.77	5.77	15.31	327.6	VERTICAL	149	1182.56	495489.98	5251009.25	Hood Exhaust
EU02	FACSV001	$PM_{2.5}$	24-hr	1	450.31	47.57	5.47	15.31	327.35	VERTICAL	0.005	0.04	495494.98	5251011.25	Emergency power generator
EU03	FACSV003	$PM_{2.5}$	24-hr	2	450.31	46.37	5.17	15.31	327.1	VERTICAL	10	79.37	495499.98	5251013.25	Emergency power generator

												Easting	Northing	
Permit ID	AERMOD ID	Pollutant	Averaging Time	Operating Scenario #	Base_Elev [m]	Height [m]	Diam [m]	Exit_Vel [m/s]	Exit_Temp [K]	Release_Type	Emission_Rate (g/sec)	Emission_Rate (lb/hr)	X1 [m]	Y1 [m]	DESC

													Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Diam	Exit_Vel	Exit_Temp	Release_Type	Emission_Rate	Emission_Rate	X1	Y1	DESC

													Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Diam	Exit_Vel	Exit_Temp	Release_Type	Emission_Rate	Emission_Rate	X1	Y1	DESC

													Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Diam	Exit_Vel	Exit_Temp	Release_Type	Emission_Rate	Emission_Rate	X1	Y1	DESC

													Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Diam	Exit_Vel	Exit_Temp	Release_Type	Emission_Rate	Emission_Rate	X1	Y1	DESC

													Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Diam	Exit_Vel	Exit_Temp	Release_Type	Emission_Rate	Emission_Rate	X1	Y1	DESC

													Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Diam	Exit_Vel	Exit_Temp	Release_Type	Emission_Rate	Emission_Rate	X1	Y1	DESC

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

AQDMPS-01

Air Quality Dispersion Modeling (AQDM) Protocol Spreadsheet

Protocol Form for Criteria Pollutant Modeling

Doc Type: Air Dispersion Modeling

AQ Facility ID No:	
Facility Name:	
Facility Address:	
Facility Contact:	

Model Input Key

Parameters	Units	Description
Permit ID		ID given in Permit or contact MPCA permit engineer
AERMOD ID		3-character facility ID plus AREA source ID used in Modeling (up to 8 characters), e.g. FACFS001
Pollutant		Criteria pollutant modeled, PM2.5, PM10, SO2, NO2, CO, Pb, O3
Averaging Time		Modeling Period for pollutant, 1-HR, 24-HR, Annual, etc.
Operating Scenario	[#]	A number indicating the operating condition, described in the Emission Calculations tab, for which the emission rate will be modeled.
Base_Elev =	[m]	Source base elevation above mean sea level
Height =	[m]	Release height above ground
Length_X =	[m]	X side length of the AREA
Length_Y =	[m]	Y side length of the AREA
Rotation Angle	[deg]	
SigmaZ =	[m]	Initial sigma Z (optional for all AREA)
Emission_Rate =	[g/s/m2]	Emission rate (g/s for POINT and VOLUME, g/s/m2 for all AREA and OPENPIT)
X1 =	[m]	X coordinate of source location [m] Enter here the X coordinate for the vertex of the area source that occurs in the southwest quadrant of the source.
Y1 =	[m]	Y coordinate of source location [m] Enter here the Y coordinate for the vertex of the area source that occurs in the southwest quadrant of the source.
Desc =		Optional description

Permit ID	AERMOD ID	Pollutant	Averaging Time	Operating Scenario	Base_Elev [m]	Height [m]	Length_X [m]	Length_Y [m]	Rotation_Angle [deg]	sigma z [m]	Emission_Rate ($g/sec/m^2$)	Emission_Rate ($lb/hr/ft^2$)	X1 [m]	Y1 [m]	Desc
FS001	FACCONCWE	PM10	24-hr	2	469.24	0	200	500	0		1		483070.73	5247239.03	parking lot
FS002	FACOXPILE	PM2.5	24-hr	1	469.24	0	50	100	0		0.00000536		483070.73	5247239.03	talings basin

Stack Parameter Input Table

Permit ID	AERMOD ID	Pollutant	Averaging Time	Operating Scenario #	Base_Elev [m]	Height [m]	Length_X [m]	Length_Y [m]	Rotation_Angle [deg]	sigma z [m]	Emission_Rate ($g/sec/m^2$)	Emission_Rate ($lb/hr/ft^2$)	X1 [m]	Y1 [m]	Desc

Stack Parameter Input Table

Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Length_X	Length_Y	Rotation_Angle	sigma z	Emission_Rate	Emission_Rate	X1	Y1	Desc
ID	ID			#	[m]	[m]	[m]	[m]	[deg]	[m]	(g/sec/m^2)	(lb/hr/ft^2)	[m]	[m]	

Stack Parameter Input Table

Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Length_X	Length_Y	Rotation_Angle	sigma z	Emission_Rate	Emission_Rate	X1	Y1	Desc
ID	ID			#	[m]	[m]	[m]	[m]	[deg]	[m]	(g/sec/m^2)	(lb/hr/ft^2)	[m]	[m]	

Stack Parameter Input Table

Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Length_X	Length_Y	Rotation_Angle	sigma z	Emission_Rate	Emission_Rate	X1	Y1	Desc
ID	ID			#	[m]	[m]	[m]	[m]	[deg]	[m]	(g/sec/m^2)	(lb/hr/ft^2)	[m]	[m]	

Stack Parameter Input Table

Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Length_X	Length_Y	Rotation_Angle	sigma z	Emission_Rate	Emission_Rate	X1	Y1	Desc
ID	ID			#	[m]	[m]	[m]	[m]	[deg]	[m]	(g/sec/m^2)	(lb/hr/ft^2)	[m]	[m]	

Stack Parameter Input Table

Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	Length_X	Length_Y	Rotation_Angle	sigma z	Emission_Rate	Emission_Rate	X1	Y1	Desc
ID	ID			#	[m]	[m]	[m]	[m]	[deg]	[m]	(g/sec/m^2)	(lb/hr/ft^2)	[m]	[m]	

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

AQDMPS-01

Air Quality Dispersion Modeling (AQDM) Protocol Spreadsheet

Protocol Form for Criteria Pollutant Modeling

Doc Type: Air Dispersion Modeling

AQ Facility ID No:	
Facility Name:	
Facility Address:	
Facility Contact:	

Model Input Key

Parameters	Units			Description
Permit ID		ID given in Permit or contact MPCA permit engineer		
AERMOD ID		3-character facility ID plus VOLUME source ID used in Modeling (up to 8 characters), e.g. FACFS001		
Pollutant		Criteria pollutant modeled, PM2.5, PM10, SO2, NO2, CO, Pb, O3		
Averaging Time		Modeling Period for pollutant, 1-HR, 24-HR, Annual, etc.		
Operating Scenario	[#]	A number indicating the operating condition, described in the Emission Calculations tab, for which the emission rate will be modeled.		
Base_Elev =	[m]	Source base elevation above mean sea level		
Height =	[m]	Release height above ground		
SigmaY =	[m]	Initial sigma Y (VOLUME only)		
SigmaZ =	[m]	Initial sigma Z (all AREA and VOLUME only, optional for all AREA)		
Length_X =	[m]	X side length (OPEN PIT, AREA and VOLUME only, optional for VOLUME, will be used to calculate SigmaY)		
Emission_Rate =	[g/s]	Emission rate (g/s for POINT and VOLUME, g/s/m2 for all AREA and OPENPIT)		
Num_Coords =		Number of coordinate pairs (POINT = 1, VOLUME = 1, OPENPIT = 1, AREA = 1, AREA_CIRC = 1, AREA_POLY >= 3)		
X1 =	[m]	X coordinate of source location [m]		
Y1 =	[m]	Y coordinate of source location [m]		
Desc =		source description		

							Lateral Dimension	Vertical Dimension				Easting	Northing	
Permit ID	AERMOD ID	Pollutant	Averaging Time	Operating Scenario	Base_Elev [m]	Height [m]	SigmaY [m]	SigmaZ [m]	Length_X [m]	Emission_Rate (g/sec)	Emission_Rate (lb/hr)	X1 [m]	Y1 [m]	Desc
FS002	FACCONCWE	$PM_{2.5}$	24-hr	2	469.24	5	0.2	0.47				483070.73	5247239.03	haul road
FS003	FACSPACEHT	NO_2	24-hr	1	469.24	5	15.2	4.65				483070.73	5247239.03	space heaters

							Lateral Dimension	Vertical Dimension				Easting	Northing	
Permit ID	AERMOD ID	Pollutant	Averaging Time	Operating Scenario	Base_Elev [m]	Height [m]	SigmaY [m]	SigmaZ [m]	Length_X [m]	Emission_Rate (g/sec)	Emission_Rate (lb/hr)	X1 [m]	Y1 [m]	Desc

							Lateral Dimension	Vertical Dimension				Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	SigmaY	SigmaZ	Length_X	Emission_Rate	Emission_Rate	X1	Y1	

							Lateral Dimension	Vertical Dimension				Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	SigmaY	SigmaZ	Length_X	Emission_Rate	Emission_Rate	X1	Y1	

							Lateral Dimension	Vertical Dimension				Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	SigmaY	SigmaZ	Length_X	Emission_Rate	Emission_Rate	X1	Y1	

							Lateral Dimension	Vertical Dimension				Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	SigmaY	SigmaZ	Length_X	Emission_Rate	Emission_Rate	X1	Y1	

							Lateral Dimension	Vertical Dimension				Easting	Northing	
Permit	AERMOD	Pollutant	Averaging Time	Operating Scenario	Base_Elev	Height	SigmaY	SigmaZ	Length_X	Emission_Rate	Emission_Rate	X1	Y1	

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

AQDMPS-01

Air Quality Dispersion Modeling (AQDM) Protocol Spreadsheet

Protocol Form for Criteria Pollutant Modeling

Doc Type: Air Dispersion Modeling

AQ Facility ID No:	
Facility Name:	
Facility Address:	
Facility Contact:	

Permit ID	AERMOD ID	Emission Unit	Pollutant	Description	Emission Factor	Emission Factor Units	Emission Factors References/Assumptions/Equations	Operating Scenario Number	Operating Scenario Description
								#	
SV01	FACSV001	EU001	NO_2	Emergency Power Generator Concentrator - Diesel	0.01	lb/hp-hr	1,200 kW capacity provided by vendor x 1.341 hp/kW = 1,609 hp lb/hp-hr emission factors from AP-42 'Large Stationary Diesel And All Stationary Dual-fuel Engines' (10/96)Table 3.4.1 SO2: 0.00809 x S lb/hp-hr; Assume diesel fuel sulfur content (S) of 0.05% = 4.045E-4 lb SO2/hp-hr	1	running 24 hours / 7days
SV	FACSV001	EU002	NO_2	Emergency Power Generator Concentrator - Diesel	0.01	lb/hp-hr	1,200 kW capacity provided by vendor x 1.341 hp/kW = 1,609 hp lb/hp-hr emission factors from AP-42 'Large Stationary Diesel And All Stationary Dual-fuel Engines' (10/96)Table 3.4.1 SO2: 0.00809 x S lb/hp-hr; Assume diesel fuel sulfur content (S) of 0.05% = 4.045E-4 lb SO2/hp-hr	2	testing scenario: run for 1-hr between noon and 4 pm.

Emission Calculations Table

Permit ID	AERMOD ID	Emission Unit	Pollutant	Description	Emission Factor	Emission Factor Units	Emission Factors References/Assumptions/Equations	Operating Scenario Number	Operating Scenario Description
								#	

Permit ID	AERMOD ID	Emission Unit	Pollutant	Description	Emission Factor	Emission Factor Units	Emission Factors References/Assumptions/Equations	Operating Scenario Number #	Operating Scenario Description