Appendix A

TABLE 1 - Point Source Parameters for Actual Value Modeling

Source #	Description	Height (m)	Temperature (K)	Velocity (m/s)	Diameter (m)
30001	Main Stack	167.6	346.67	5.81	10.31
40004	Dross Kettle Stack	21.3	391.5	0.69	0.76
40005	Dross Kettle Stack	21.3	391.5	0.69	0.76
40007	Baghouse #7 Stack	30.48	276.11	34.57	3.05
50007	Baghouse #8 Stack	30.48	285.56	7.13	2.59
50008	Baghouse #9 Stack	30.48	276.11	34.57	3.05
50011	Refinery Kettle Stack	18.8	989.3	5.96	0.61
50012	Refinery Kettle Stack	18.8	989.3	5.96	0.61
50013	Refinery Kettle Stack	18.8	989.3	5.96	0.61
50014	Refinery Kettle Stack	18.8	989.3	5.96	0.61
50015	Refinery Kettle Stack	18.8	989.3	5.96	0.61
50016	Refinery Kettle Stack	18.8	989.3	5.96	0.61
50017	Refinery Kettle Stack	18.8	989.3	5.96	0.61
50018	Refinery Kettle Stack	18.8	989.3	5.96	0.61
60001	Strip Mill Stack	21.3	699.8	2.73	0.56
60002	Strip Mill Stack	21.3	699.8	2.73	0.56
60003	Strip Mill Baghouse	7.6	297.0	7.70	1.08
60004	Low Alpha Baghouse	6.1	327.6	17.5	0.25
60005	Strip Mill Vents	16.8	297.0	5.0	0.56
60006	Strip Mill Vents	16.8	297.0	5.0	0.56
60007	Strip Mill Vents	16.8	297.0	5.0	0.56
60008	Strip Mill Vents	16.8	297.0	5.0	0.56

TABLE 2 - Volume Source Parameters for Actual Value Modeling

Source #	Description	Release Height (m)	σ_{yinit} (m)	σ_{zinit} (m)
10001A1	Concentrate Truck Dump to Hopper	0.61	0.28	0.28
10001A2	Conv. Drop Point to Storage (Conc)	4.27	0.21	0.28
10001B1	Loading Concentrate to Railcar	4.27	0.57	0.28
10001B2	Railcar Unloading at Trestle (Conc)	6.40	2.33	10.60
20001A	Sinter Load to Railcar	4.27	0.57	0.28
20001B	Sinter Dump (Railcar into Unloader)	6.40	2.33	10.60
20002	Load Sinter to Truck	3.66	0.57	0.28
20003	Dump Sinter to Storage	4.27	0.21	0.28
20004	Fume Loading	4.27	0.57	0.28
20004B	Railcar Fume Unloading at S. Storage	0.91	0.57	0.43
20004C	Railcar Fume Loading Front End Loader	3.66	0.57	0.28
20005A-F	Sinter Mix Room	18.3	5.11	8.5
20006	Sinter Building Fugitives	20.0	0.2	18.0

TABLE 2 - Volume Source Parameters for Actual Value Modeling (continued)

20007	#3 Bag House Roof Vent	21.3	0.3	10.1
30002	Blast Furnace Fugitives	16.3	4.65	1.1
30011-13	#5 Bag House Roof Vents	21.3	0.3	12.7
40006	Dross Plant Fugitives	7.62	15.12	7.09
50006	Refinery Plant Fugitives	5.49	18.6	5.1
70001	Fug Dross Handling	2.0	2.33	0.00
70003	Fug Concentrate Handling	2.0	2.33	0.00
70007	Fug Slag Handling	2.0	2.33	0.00
70009	Fug Secondaries Handling	2.0	2.33	0.00

TABLE 3 - Area Source Parameters for Actual Value Modeling

Source #	Description	Release Height (m)	X_{init} (m)	Y_{init} (m)	Angle (°)	σ_{zinit} (m)
70002	Dross Storage Wind Erosion	2.0	30	40	0	0.00
70004	Concentrate Storage Wind Erosion	2.0	15	150	0	0.00
70006	Sinter Storage Wind Erosion	2.0	15	150	0	0.00
70008A	Slag South Wind Erosion	2.0	166	275	51	0.00
70008B	Slag North Wind Erosion	2.0	75	175	51	0.00
70010	Secondary Storage Wind Erosion	2.0	20	40	0	0.00
70100	Road AB (55 to Joachim Bridge Exit)	0.0	10	64.48	90.01	1.40
70101	Road AB	0.0	74.17	10	1.24	1.40
70102	Road AB	0.0	74.17	10	1.24	1.40
70103	Road AB	0.0	10	58.12	86.83	1.40
70104	Road AB	0.0	10	58.12	86.83	1.40
70105	Road AB	0.0	10	64.48	90.01	1.40
70106	Road AB	0.0	10	64.48	90.01	1.40
70107	Road AB	0.0	54.90	10	3.36	1.40
70108	Road AB	0.0	54.90	10	3.36	1.40
70109	Road AB	0.0	10	62.86	90.01	1.40
70110	Road AB	0.0	10	62.86	90.01	1.40
70111	Road AB	0.0	10	49.97	90.01	1.40
70112	Road AB	0.0	10	49.97	90.01	1.40
70113	Road AB	0.0	10	38.69	90.01	1.40
70114	Road AB	0.0	10	77.39	2.39	1.40
70115	Road AB	0.0	10	51.57	1.79	1.40
70116	Road AB	0.0	10	51.57	1.79	1.40
70117	Road AB	0.0	10	61.21	0	1.40
70118	Road AB	0.0	10	86.75	15.08	1.40
70119	Road AB	0.0	10	76.58	22.26	1.40

TABLE 3 - Area Source Parameters for Actual Value Modeling (continued)

70120	Road AB	0.0	10	84.57	17.76	1.40
70121	Road AB	0.0	10	72.68	12.81	1.40
70122	Road AB	0.0	10	32.85	11.32	1.40
70150	Road BC (Joachim Bridge Exit to Plant Entrance)	0.0	10	50.46	13.69	1.40
70151	Road BC	0.0	10	50.46	13.69	1.40
70152	Road BC	0.0	10	55.89	12.66	1.40
70153	Road BC	0.0	10	55.89	12.66	1.40
70154	Road BC	0.0	10	49.99	11.57	1.40
70155	Road BC	0.0	10	49.99	11.57	1.40
70156	Road BC	0.0	10	74.83	22.77	1.40
70157	Road BC	0.0	10	65.31	29.64	1.40
70158	Road BC	0.0	10	65.31	29.64	1.40
70159	Road BC	0.0	10	63.25	28.39	1.40
70160	Road BC	0.0	10	63.25	28.39	1.40
70161	Road BC	0.0	10	94.58	26.58	1.40
70162	Road BC	0.0	10	50.33	29.14	1.40
70163	Road BC	0.0	10	50.33	29.14	1.40
70164	Road BC	0.0	10	52.79	24.96	1.40
70165	Road BC	0.0	10	52.79	24.96	1.40
70166	Road BC	0.0	10	50.82	28.83	1.40
70167	Road BC	0.0	10	50.82	28.83	1.40
70168	Road BC	0.0	10	65.74	28.32	1.40
70169	Road BC	0.0	10	52.91	22.26	1.40
70170	Road BC	0.0	10	43.73	14.75	1.40
70171	Road BC	0.0	10	75.95	5.05	1.40
70172	Road BC	0.0	98.04	10	87.40	1.40
70173	Road BC	0.0	66.93	10	86.18	1.40
70174	Road BC	0.0	90.59	10	84.36	1.40
70175	Road BC	0.0	62.01	10	68.95	1.40
70176	Road BC	0.0	68.72	10	65.08	1.40
70177	Road BC	0.0	53.87	10	7.11	1.40
70178	Road BC	0.0	53.87	10	7.11	1.40
70179	Road BC	0.0	97.42	10	10.53	1.40
70180	Road BC	0.0	54.02	10	8.29	1.40
70181	Road BC	0.0	54.02	10	8.29	1.40
70182	Road BC	0.0	65.51	10	17.80	1.40
70183	Road BC	0.0	51.82	10	8.64	1.40
70184	Road BC	0.0	51.82	10	8.64	1.40
70185	Road BC	0.0	91.32	10	12.67	1.40
70186	Road BC	0.0	53.37	10	23.34	1.40
70187	Road BC	0.0	53.37	10	23.34	1.40
70188	Road BC	0.0	52.18	10	39.78	1.40

TABLE 3 - Area Source Parameters for Actual Value Modeling (continued)

70189	Road BC	0.0	52.18	10	39.78	1.40
70190	Road BC	0.0	90.62	10	47.47	1.40
70191	Road BC	0.0	52.17	10	50.17	1.40
70192	Road BC	0.0	52.17	10	50.17	1.40
70193	Road BC	0.0	83.81	10	50.37	1.40
70194	Road BC	0.0	66.20	10	47.70	1.40
70195	Road BC	0.0	57.75	10	62.43	1.40
70196	Road BC	0.0	76.20	10	83.29	1.40
70197	Road BC	0.0	73.49	10	88.26	1.40
70198	Road BC	0.0	62.33	10	90	1.40
70199	Road BC	0.0	10	61.78	12.49	1.40
70200	Road BC	0.0	10	53.76	27.11	1.40
70201	Road BC	0.0		53.76	27.11	1.40
70202	Road BC	0.0	10	66.19	19.67	1.40
70203	Road BC	0.0	10	64.25	14.05	1.40
70204	Road BC	0.0	10	86.59	17.98	1.40
70205	Road BC	0.0	10	61.57	12.54	1.40
70206	Road BC	0.0	10	58.43	17.76	1.40
70207	Road BC	0.0	10	49.28	18.45	1.40
70208	Road BC	0.0	10	56.75	11.32	1.40
70209	Road BC	0.0	10	45.40	11.32	1.40
70210	Road BC	0.0	10	68.57	13.14	1.40
70211	Road BC	0.0	10	54.98	21.39	1.40
70212	Road BC	0.0	10	49.28	18.45	1.40
70213	Road BC	0.0	10	5.45	26.90	1.40
70250	Road CD (Plant Entrance to NW Corner of Strip Mill Building)	0.0	10	21.62	19.93	1.40
70251	Road CD	0.0	68.70	10	68.35	1.40
70252	Road CD	0.0	51.46	10	68.07	1.40
70300	Road DE (NW Corner of Strip Mill to Concentrate Hopper)	0.0	46.05	10	12.23	1.40
70350	Road EF (Conc. Hipper to SW Corner of Strip Mill Building)	0.0	23.47	10	9.61	1.40
70351	Road EF	0.0	17.74	10	32.45	1.40
70352	Road EF	0.0	21.78	10	77.98	1.40
70353	Road EF	0.0	10	41.34	3.78	1.40
70354	Road EF	0.0	29.47	10	89.12	1.40
70355	Road EF	0.0	10	25.79	10.13	1.40
70356	Road EF	0.0	10	18.62	55.95	1.40
70357	Road EF	0.0	10	22.52	71.22	1.40
70358	Road EF	0.0	10	26.67	83.72	1.40
70400	Road DF (NW Corner of Strip Mill to SW Corner of Strip Mill)	0.0	10	22.81	2.40	1.40

TABLE 3 - Area Source Parameters for Actual Value Modeling (continued)

70401	Road DF	0.0	10	23.48	2.87	1.40
70402	Road DF	0.0	10	28.02	9.32	1.40
70403	Road DF	0.0	10	19.58	5.32	1.40
70404	Road DF	0.0	24.35	10	65.80	1.40
70405	Road DF	0.0	30.68	10	71.02	1.40
70406	Road DF	0.0	16.78	10	68.49	1.40
70450	Road FG (SW Corner of Strip Mill to North End of Slag Road)	0.0	23.40	10	68.39	1.40
70451	Road FG	0.0	31.73	10	59.02	1.40
70452	Road FG	0.0	28.05	10	55.52	1.40
70453	Road FG	0.0	31.66	10	51.96	1.40
70454	Road FG	0.0	10.98	10	51.69	1.40
70500	Road GH (North End of Slag Road to Refinery Dock)	0.0	29.96	10	79.53	1.40
70501	Road GH	0.0	19.13	10	84.56	1.40
70502	Road GH	0.0	10	27.21	1.91	1.40
70503	Road GH	0.0	10	23.16	3.37	1.40
70504	Road GH	0.0	10	27.29	4.77	1.40
70505	Road GH	0.0	10	25.13	7.26	1.40
70506	Road GH	0.0	10	27.67	5.64	1.40
70507	Road GH	0.0	10	27.05	13.58	1.40
70508	Road GH	0.0	10	18.86	27.20	1.40
70509	Road GH	0.0	10	25.99	42.90	1.40
70510	Road GH	0.0	10	18.70	39.12	1.40
70511	Road GH	0.0	10	19.92	41.33	1.40
70512	Road GH	0.0	10	19.24	45.02	1.40
70513	Road GH	0.0	10	17.85	62.80	1.40
70550	Road GK (South Slag Road)	0.0	10	20.25	74.42	1.40
70551	Road GK	0.0	10	21.51	55.33	1.40
70552	Road GK	0.0	10	17.86	23.98	1.40
70553	Road GK	0.0	24.48	10	90	1.40
70600	Road HL (North End of Main Building to Refinery Dock UNP)	0.0	10	23.58	1.10	1.40
70601	Road HL	0.0	35.37	10	88.53	1.40
70602	Road HL	0.0	10	31.74	0.82	1.40
70603	Road HL	0.0	10	37.18	0.70	1.40
70604	Road HL	0.0	10	24.97	3.12	1.40
70605	Road HL	0.0	10	37.80	5.51	1.40
70606	Road HL	0.0	10	29.92	0.87	1.40
70607	Road HL	0.0	24.48	10	90	1.40
70608	Road HL	0.0	10	35.82	1.45	1.40
70609	Road HL	0.0	10	32.69	3.18	1.40
70610	Road HL	0.0	10	25.94	5.02	1.40

TABLE 3 - Area Source Parameters for Actual Value Modeling (continued)

70611	Road HL	0.0	10	21.09	8.66	1.40
70612	Road HL	0.0	10	14.00	29.07	1.40
70650	Road IJ (Sinter Plant to Sinter Storage)	0.0	10	17.32	82.58	1.40
70651	Road IJ	0.0	10	16.15	56.33	1.40
70652	Road IJ	0.0	10	28.36	1.51	1.40
70653	Road IJ	0.0	21.01	10	73.48	1.40
70654	Road IJ	0.0	10	26.79	12.88	1.40
70655	Road IJ	0.0	10	18.66	36.89	1.40
70656	Road IJ	0.0	10	21.02	27.49	1.40
70657	Road IJ	0.0	10	31.49	13.72	1.40
70658	Road IJ	0.0	17.22	10	72.34	1.40
70659	Road IJ	0.0	23.56	10	79.04	1.40
70660	Road IJ	0.0	28.24	10	77.79	1.40
70661	Road IJ	0.0	24.63	10	88.26	1.40
70662	Road IJ	0.0	20.90	10	87.95	1.40
70663	Road IJ	0.0	10	20.94	4.09	1.40
70664	Road IJ	0.0	19.45	10	85.60	1.40
70665	Road IJ	0.0	13.43	10	90	1.40
70666	Road IJ	0.0	19.37	10	74.35	1.40
70667	Road IJ	0.0	19.36	10	62.43	1.40
70668	Road IJ	0.0	20.08	10	47.99	1.40
70669	Road IJ	0.0	11.66	10	39.78	1.40
70700	Road KM (South Slag Road - Unpaved)	0.0	10	29.75	61.04	1.40
70701	Road KM	0.0	10	43.12	75.53	1.40
70702	Road KM	0.0	10	42.69	69.94	1.40
70703	Road KM	0.0	10	25.49	65.68	1.40

Table 4 - Point Source Parameters for Design Value Modeling

Source #	Description	Emission Rate (g/s)	Height (m)	Temp (K)	Velocity (m/s)	Diameter (m)
30001	Main Stack	1.48*	100.75	346.67	5.81	10.31
40004	Dross Kettle Stack	1.72E-03	21.3	391.5	0.69	0.76
40005	Dross Kettle Stack	1.72E-03	21.3	391.5	0.69	0.76
40007	#7 Baghouse	1.39E-01	30.48	276.1	34.57	3.05
50007	#8 Baghouse	5.90E-02	30.48	285.6	7.13	2.59
50008	#9 Baghouse	4.00E-01	30.48	276.1	34.57	3.05
50011	Refinery Kettle Stack	3.31E-03	18.8	989.3	5.96	0.61
50012	Refinery Kettle Stack	3.31E-03	18.8	989.3	5.96	0.61
50013	Refinery Kettle Stack	3.31E-03	18.8	989.3	5.96	0.61
50014	Refinery Kettle Stack	3.31E-03	18.8	989.3	5.96	0.61
50015	Refinery Kettle Stack	3.31E-03	18.8	989.3	5.96	0.61

Table 4 - Point Source Parameters for Design Value Modeling (continued)

50016	Refinery Kettle Stack	3.31E-03	18.8	989.3	5.96	0.61
50017	Refinery Kettle Stack	3.31E-03	18.8	989.3	5.96	0.61
50018	Refinery Kettle Stack	3.31E-03	18.8	989.3	5.96	0.61
60001	Strip Mill Stack	1.13E-04	21.3	699.8	2.73	0.56
60002	Strip Mill Stack	1.13E-04	21.3	699.8	2.73	0.56
60003	Strip Mill Baghouse	5.93E-06	7.6	297.0	7.70	1.08
60004	Low Alpha Baghouse	1.80E-03	6.1	327.6	17.5	0.25
60005	Strip Mill Vents	1.17E-03	16.8	297.0	5.0	0.56
60006	Strip Mill Vents	1.17E-03	16.8	297.0	5.0	0.56
60007	Strip Mill Vents	1.17E-03	16.8	297.0	5.0	0.56
60008	Strip Mill Vents	1.17E-03	16.8	297.0	5.0	0.56

* Previous Stack Test – Not intended to be used for limitation

TABLE 5 - Volume Source Parameters for Design Value Modeling

Source #	Description	Emission Rate (g/s)	Release Height (m)	σ_{yinit} (m)	σ_{zinit} (m)
10001A1	Concentrate Truck Dump*	2.054E-02	0.61	0.28	0.28
10001A2	Concentrate to Railcar/Storage*	2.054E-02	4.27	0.21	0.28
10001B1	Load Concentrate from Storage to Railcar*	5.108E-02	4.27	0.57	0.28
10001B2	Dump Concentrate from Railcar at Unloader*	5.108E-02	6.40	2.33	10.6
10001C	Railcar Fume Dump**	2.224E-02	6.4	2.33	10.6
20001A	Load Sinter to Railcar	1.80E-05	4.27	0.57	0.28
20001B	Dump Sinter into Trestle	1.80E-05	6.4	2.33	10.6
20002	Sinter Loading to Truck	1.242E-05	3.66	0.57	0.28
20003	Sinter Unload (Storage)	1.242E-05	4.27	0.21	0.28
20004	Fume Loading	4.45E-03	4.27	0.57	0.28
20005A	Sinter Mix Room	7.59E-03	18.3	5.11	8.5
20005B	Sinter Mix Room	7.59E-03	18.3	5.11	8.5
20005C	Sinter Mix Room	7.59E-03	18.3	5.11	8.5
20005D	Sinter Mix Room	7.59E-03	18.3	5.11	8.5
20005E	Sinter Mix Room	7.59E-03	18.3	5.11	8.5
20005F	Sinter Mix Room	7.59E-03	18.3	5.11	8.5
20006	Sinter Building Fugitives	3.86E-02	20.0	0.2	18.0
20007	#3 Bag House Roof Vent	3.72E-04	21.3	0.3	10.1
30002	Blast Furnace Fugitive	5.99E-02	9.3	18.6	8.65
30011	#5 Bag House Roof Vents	2.48E-04	21.3	0.3	12.7
30012	#5 Bag House Roof Vents	2.48E-04	21.3	0.3	12.7
30013	#5 Bag House Roof Vents	2.48E-04	21.3	0.3	12.7
40006	Dross Building Fugitives	4.33E-02	7.62	15.12	7.09
50006	Refinery Building Fugitives	3.17E-02	5.49	18.6	5.10
70001	Fug Dross Handling	***	2.0	2.33	0.00

TABLE 5 - Volume Source Parameters for Design Value Modeling (continued)

70003	Fug Concentrate Handling	***	2.0	2.33	0.00
70007	Fug Slag Handling	***	2.0	2.33	0.00
70009	Fug Secondaries Handling	***	2.0	2.33	0.00

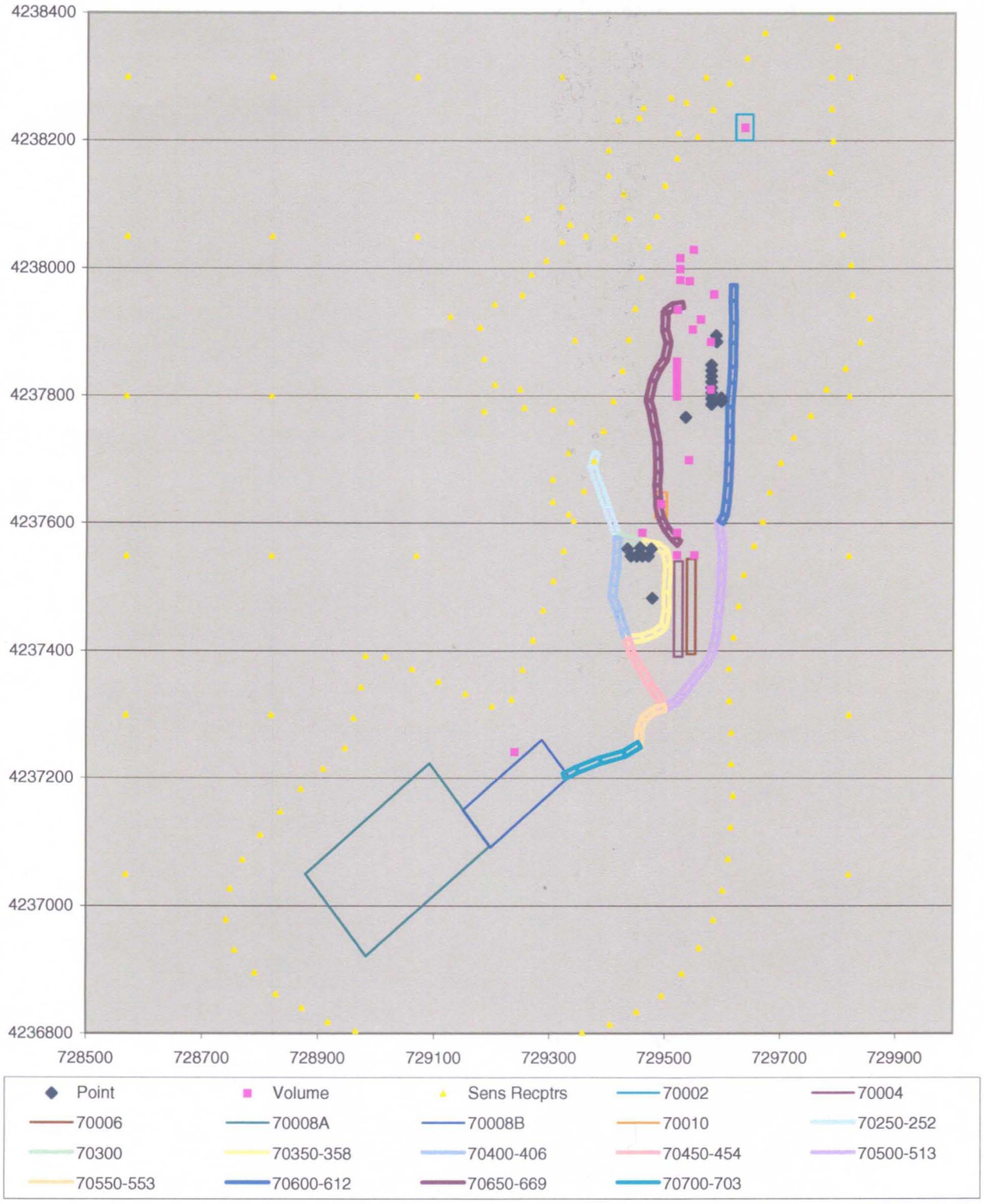
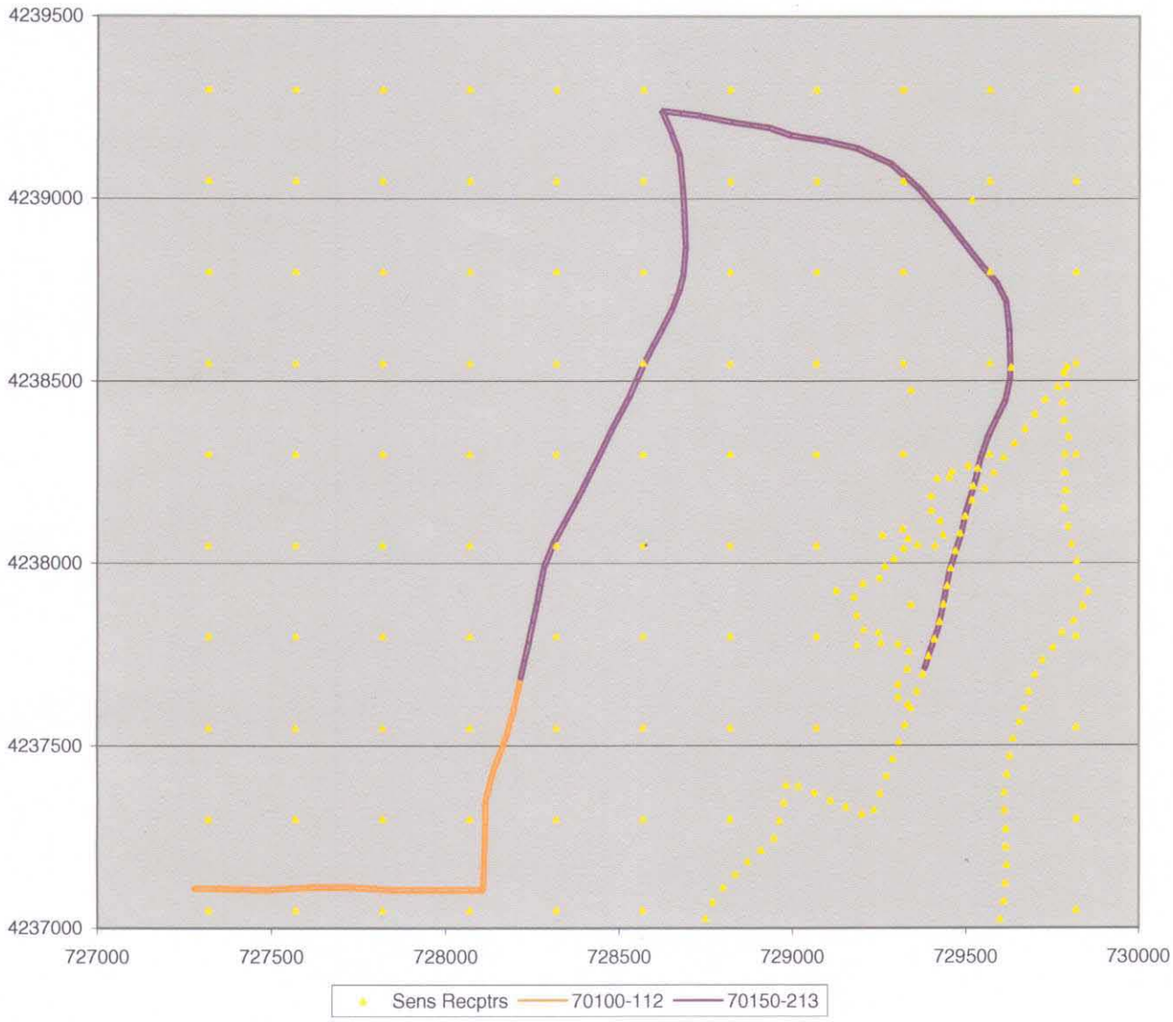
TABLE 6 - Area Source Emission Rates for Design Value Modeling

Source #	Description	Emission Rate ($g/s/m^2$)
70002	Dross Storage Wind Erosion	***
70004	Concentrate Storage Wind Erosion	***
70006	Sinter Storage Wind Erosion	***
70008A/B	Slag Wind Erosion	***
70010	Secondary Storage Wind Erosion	***
70100-122	Road AB	1.97E-07
70150-213	Road BC	7.06E-07
70250-252	Road CD	1.29E-06
70300	Road DE	6.21E-07
70350-358	Road EF	3.34E-07
70400-406	Road DF	7.07E-07
70450-454	Road FG	7.35E-07
70500-513	Road GH	1.01E-06
70550-553	Road GK	1.44E-07
70600-612	Road HL	4.23E-06
70650-669	Road IJ	5.14E-07
70700-703	Road KM	4.23E-06

NOTE: * sources with a 12-hour operating schedule (6 AM – 6 PM) and
** fume unloading has 2 hours per day operation (2 PM – 4 PM)
*** fugitive handling and wind erosion sources have a meteorological component and are denoted in an hourly emission file

BOLD indicates new parameters or sources.

In-plant Modeled Emission Sources



Haul Routes Modeled
(External to Plant)