APPENDIX F

NO PRIOR TREATMENT(NPT) BASELINE AND OPTIONS

		NPT Baseline			Option 1 (NPT)			Option 2 (NPT)			Option 3 (NPT)			Option 4 (NPT)		
		Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector		
Commodity	**Waste Stream**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**
Alumina and Aluminum	Cast house dust	19,090	19,090	19,090	19,090	19,090	19,090	5,727	5,727	5,727	5,727	5,727	5,727	2,864	2,864	2,864
	Electrolysis waste	-	28,750	57,500	-	28,750	57,500	-	8,625	17,250	-	8,625	17,250	-	4,313	8,625
Antimony	Autoclave filtrate	-	13,500	54,000	-	13,500	54,000	-	12,150	48,600	-	12,150	48,600	-	10,800	43,200
	Stripped anolyte solids	-	-	-	-	19	38	-	-	-	-	-	-	-	-	-
	Slag and furnace residue	-	10,500	21,000	-	10,500	21,000	-	10,500	21,000	-	10,500	21,000	-	10,500	21,000
Beryllium	Chip treatment wastewater	-	50,000	2,000,000	-	50,000	2,000,000	-	45,000	1,800,000	-	45,000	1,800,000	-	40,000	1,600,000
	Filtration discard	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000
Bismuth	Alloy residues	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000
	Spent caustic soda	-	3,050	12,000	-	3,050	12,000	-	915	3,600	-	915	3,600	-	458	1,800
	Electrolytic slimes	-	10	200	-	10	200	-	3	60	-	3	60	-	2	30
	Lead and zinc chlorides	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000
	Metal chloride residues	-	1,500	3,000	-	1,500	3,000	-	1,500	3,000	-	1,500	3,000	-	1,500	3,000
	Slag	-	500	10,000	-	500	10,000	-	500	10,000	-	500	10,000	-	500	10,000
	Spent electrolyte	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000
	Spent soda solution	-	3,050	12,000	-	3,050	12,000	-	915	3,600	-	915	3,600	-	458	1,800
	Waste acid solutions	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000
	Waste acids	-	50	200	-	50	200	-	45	180	-	45	180	-	40	160
Cadmium	Caustic washwater	-	950	19,000	-	950	19,000	-	285	5,700	-	285	5,700	-	143	2,850
	Copper and lead sulfate filter cakes	-	950	19,000	-	950	19,000	-	285	5,700	-	285	5,700	-	143	2,850
	Copper removal filter cake	-	950	19,000	-	950	19,000	-	285	5,700	-	285	5,700	-	143	2,850
	Iron containing impurities	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000
	Spent leach solution	-	950	19,000	-	950	19,000	-	950	19,000	-	285	5,700	-	143	2,850
	Lead sulfate waste	-	950	19,000	-	950	19,000	-	285	5,700	-	285	5,700	-	143	2,850
	Post-leach filter cake	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000
	Spent purification solution	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000
	Scrubber wastewater	-	950	19,000	-	950	19,000	-	950	19,000	-	285	5,700	-	143	2,850
	Spent electrolyte	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000
	Zinc precipitates	-	950	19,000	-	950	19,000	-	285	5,700	-	285	5,700	-	143	2,850
Calcium	Dust with quicklime	-	-	-	-	4	8	-	20	40	-	-	-	-	-	-
Coal Gas	Multiple effects evaporator concentrate	-	-	39,000	-	-	58,500	-	-	65,000	-	-	26,000	-	-	16,250
Copper	Acid plant blowdown	3,180,000	3,180,000	3,180,000	4,770,000	4,770,000	4,770,000	5,300,000	5,300,000	5,300,000	2,120,000	2,120,000	2,120,000	1,325,000	1,325,000	1,325,000
	WWTP sludge	-	1,800	3,600	-	2,700	5,400	-	1,200	2,400	-	1,200	2,400	-	750	1,500
Elemental Phosphorus	Andersen Filter Media	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460
	AFM rinsate	-	-	-	800	800	800	4,000	4,000	4,000	-	-	-	-	-	-
	Furnace scrubber blowdown	-	-	-	84,000	84,000	84,000	420,000	420,000	420,000	-	-	-	-	-	-
	Furnace Building Washdown	-	-	-	140,000	140,000	140,000	700,000	700,000	700,000	-	-	-	-	-	-
Fluorspar and Hydrofluoric Acid	Off-spec fluosilicic acid	-	4,500	27,000	-	6,750	40,500	-	3,000	18,000	-	3,000	18,000	-	1,875	11,250

NO PRIOR TREATMENT(NPT) BASELINE AND OPTIONS

		NPT Baseline			Option 1 (NPT)			Option 2 (NPT)			Option 3 (NPT)			Option 4 (NPT)		
		Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector		
Commodity	**Waste Stream**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**
Germanium	Waste acid wash and rinse water	-	1,100	4,000	-	1,100	4,000	-	990	3,600	-	990	3,600	-	880	3,200
	Chlorinator wet air pollution control sludge	-	106	400	-	106	400	-	95	360	-	95	360	-	85	320
	Hydrolysis filtrate	-	106	400	-	106	400	-	106	400	-	106	400	-	106	400
	Leach residues	-	5	10	-	5	10	-	5	10	-	5	10	-	5	10
	Spent acid/leachate	-	1,100	4,000	-	1,100	4,000	-	990	3,600	-	990	3,600	-	880	3,200
	Waste still liquor	-	106	400	-	106	400	-	106	400	-	106	400	-	106	400
Lead	Acid plant sludge	-	7,050	14,100	-	7,050	14,100	-	7,050	14,100	-	2,115	4,230	-	1,058	2,115
	Baghouse incinerator ash	300	3,000	30,000	300	3,000	30,000	300	3,000	30,000	300	3,000	30,000	300	3,000	30,000
	Slurried APC Dust	-	-	-	1,380	1,380	1,380	6,900	6,900	6,900	-	-	-	-	-	-
	Solid residues	-	195	390	-	195	390	-	195	390	-	59	117	-	29	59
	Spent furnace brick	-	-	-	198	198	198	990	990	990	-	-	-	-	-	-
	Stockpiled miscellaneous plant waste	400	88,000	180,000	400	88,000	180,000	400	88,000	180,000	360	79,200	162,000	320	70,400	144,000
	WWTP liquid effluent	-	-	-	-	352,000	704,000	-	1,760,000	3,520,000	-	-	-	-	-	-
	WWTP sludges/solids	-	-	-	76,000	76,000	76,000	380,000	380,000	380,000	-	-	-	-	-	-
Magnesium and Magnesia from Brines	Cast house dust	-	380	7,600	-	380	7,600	-	114	2,280	-	114	2,280	-	57	1,140
	Smut	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000
Mercury	Dust	-	4	7	-	4	7	-	4	7	-	4	7	-	4	7
	Quench water	-	38,500	420,000	-	38,500	420,000	-	38,500	420,000	-	11,550	126,000	-	5,775	63,000
	Furnace residue	-	39	77	-	39	77	-	39	77	-	39	77	-	39	77
Molybdenum, Ferromolybdenum, and Ammonium Molybdate	Flue dust/gases	-	126,500	495,000	-	126,500	495,000	-	126,500	495,000	-	126,500	495,000	-	126,500	495,000
	Liquid residues	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000
Platinum Group Metals	Slag	-	23	450	-	23	450	-	7	135	-	7	135	-	3	68
	Spent acids	-	855	3,000	-	855	3,000	-	855	3,000	-	855	3,000	-	855	3,000
	Spent solvents	-	855	3,000	-	855	3,000	-	855	3,000	-	855	3,000	-	855	3,000
Pyrobitumens, Mineral Waxes, and Natural Asphalts	Still bottoms	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000
	Waste catalysts	-	5,000	20,000	-	5,000	20,000	-	1,500	6,000	-	1,500	6,000	-	750	3,000
Rare Earths	Spent ammonium nitrate processing solution	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
	Electrolytic cell caustic wet APC sludge	-	-	-	-	70	1,400	-	-	-	-	-	-	-	-	-
	Process wastewater	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	6,300	6,300	6,300	5,600	5,600	5,600
	Spent scrubber liquor	-	250,000	1,000,000	-	250,000	1,000,000	-	250,000	1,000,000	-	225,000	900,000	-	200,000	800,000
	Solvent extraction crud	-	1,150	4,500	-	1,150	4,500	-	1,150	4,500	-	1,150	4,500	-	1,150	4,500
	Wastewater from caustic wet APC	-	250,000	1,000,000	-	250,000	1,000,000	-	250,000	1,000,000	-	225,000	900,000	-	200,000	800,000
Rhenium	Spent barren scrubber liquor	-	50	200	-	50	200	-	50	200	-	15	60	-	8	30

NO PRIOR TREATMENT(NPT) BASELINE AND OPTIONS

		NPT Baseline			Option 1 (NPT)			Option 2 (NPT)			Option 3 (NPT)			Option 4 (NPT)		
		Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector		
Commodity	**Waste Stream**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**
	Spent rhenium raffinate	-	44,000	88,000	-	44,000	88,000	-	44,000	88,000	-	44,000	88,000	-	44,000	88,000
Scandium	Spent acids	-	1,960	7,000	-	1,960	7,000	-	1,960	7,000	-	1,960	7,000	-	1,960	7,000
	Spent solvents from solvent extraction	-	1,960	7,000	-	1,960	7,000	-	588	2,100	-	588	2,100	-	294	1,050
Selenium	Spent filter cake	-	255	5,100	-	255	5,100	-	77	1,530	-	77	1,530	-	38	765
	Plant process wastewater	66,000	66,000	66,000	66,000	66,000	66,000	66,000	66,000	66,000	59,400	59,400	59,400	52,800	52,800	52,800
	Slag	-	255	5,100	-	255	5,100	-	230	4,590	-	230	4,590	-	204	4,080
	Tellurium slime wastes	-	255	5,100	-	255	5,100	-	77	1,530	-	77	1,530	-	38	765
	Waste solids	-	255	5,100	-	255	5,100	-	255	5,100	-	255	5,100	-	255	5,100
Synthetic Rutile	Spent iron oxide slurry	-	22,500	45,000	-	22,500	45,000	-	20,250	40,500	-	20,250	40,500	-	18,000	36,000
	APC dust/sludges	-	-	-	-	3,000	6,000	-	-	-	-	-	-	-	-	-
	Spent acid solution	-	-	-	-	3,000	6,000	-	-	-	-	-	-	-	-	-
Tantalum, Columbium, and Ferrocolumbium	Digester sludge	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000
	Process wastewater	150,000	150,000	150,000	150,000	150,000	150,000	45,000	45,000	45,000	45,000	45,000	45,000	22,500	22,500	22,500
	Spent raffinate solids	-	1,000	2,000	-	1,000	2,000	-	1,000	2,000	-	1,000	2,000	-	1,000	2,000
Tellurium	Slag	-	1,000	9,000	-	1,000	9,000	-	900	8,100	-	900	8,100	-	800	7,200
	Solid waste residues	-	1,000	9,000	-	1,000	9,000	-	1,000	9,000	-	1,000	9,000	-	1,000	9,000
	Waste electrolyte	-	1,000	20,000	-	1,000	20,000	-	1,000	20,000	-	1,000	20,000	-	1,000	20,000
	Wastewater	-	-	-	-	2,000	8,000	-	-	-	-	-	-	-	-	-
Titanium and Titanium Dioxide	Pickle liquor and wash water	-	1,350	3,300	-	1,350	3,300	-	1,215	2,970	-	1,215	2,970	-	1,080	2,640
	Scrap milling scrubber water	-	2,500	6,000	-	2,500	6,000	-	2,250	5,400	-	2,250	5,400	-	2,000	4,800
	Smut from Mg recovery	100	22,000	46,000	100	22,000	46,000	30	6,600	13,800	30	6,600	13,800	15	3,300	6,900
	Leach liquor and sponge wash water	380,000	480,000	580,000	380,000	480,000	580,000	342,000	432,000	522,000	342,000	432,000	522,000	304,000	384,000	464,000
	Spent surface impoundment liquids	-	1,715	6,720	-	1,715	6,720	-	515	2,016	-	515	2,016	-	257	1,008
	Spent surface impoundments solids	-	17,850	35,700	-	17,850	35,700	-	17,850	35,700	-	17,850	35,700	-	17,850	35,700
	Waste acids (Sulfate process)	200	40,000	78,000	200	40,000	78,000	200	40,000	78,000	200	40,000	78,000	200	40,000	78,000
	WWTP sludge/solids	-	210,000	420,000	-	210,000	420,000	-	210,000	420,000	-	210,000	420,000	-	210,000	420,000
Tungsten	Spent acid and rinse water	-	-	21,000	-	-	21,000	-	-	21,000	-	-	18,900	-	-	16,800
	Process wastewater	-	2,190	9,000	-	2,190	9,000	-	2,190	9,000	-	1,971	8,100	-	1,752	7,200
Uranium	Waste nitric acid from UO2 production	-	1,275	3,400	-	1,275	3,400	-	1,148	3,060	-	1,148	3,060	-	1,020	2,720
	Vaporizer condensate	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000
	Superheater condensate	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000
	Slag	-	-	-	-	850	3,400	-	-	-	-	-	-	-	-	-
	Uranium chips from ingot production	-	1,275	3,400	-	1,275	3,400	-	383	1,020	-	383	1,020	-	191	510
Zinc	Acid plant blowdown	-	-	-	26,000	26,000	26,000	-	-	-	-	-	-	-	-	-
	Waste ferrosilicon	-	8,500	17,000	-	8,500	17,000	-	2,550	5,100	-	2,550	5,100	-	1,275	2,550
	Process wastewater	5,100,000	5,100,000	5,100,000	5,100,000	5,100,000	5,100,000	1,530,000	1,530,000	1,530,000	1,530,000	1,530,000	1,530,000	765,000	765,000	765,000
	Discarded refractory brick	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000

NO PRIOR TREATMENT(NPT) BASELINE AND OPTIONS

		NPT Baseline			Option 1 (NPT)			Option 2 (NPT)			Option 3 (NPT)			Option 4 (NPT)		
		Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector		
Commodity	**Waste Stream**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**
	Spent cloths, bags, and filters	-	-	-	-	15	30	-	-	-	-	-	-	-	-	-
	Spent goethite and leach cake residues	-	-	-	3,000	3,000	3,000	-	-	-	-	-	-	-	-	-
	Spent surface impoundment liquids	1,890,000	1,890,000	1,890,000	1,890,000	1,890,000	1,890,000	1,701,000	1,701,000	1,701,000	1,701,000	1,701,000	1,701,000	1,512,000	1,512,000	1,512,000
	WWTP Solids	-	225	450	-	338	675	-	375	750	-	150	300	-	94	188
	Spent synthetic gypsum	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900
	TCA tower blowdown	-	75	150	-	113	225	-	50	100	-	50	100	-	31	63
	Wastewater treatment plant liquid effluent	-	1,305,000	2,610,000	-	1,305,000	2,610,000	-	1,174,500	2,349,000	-	1,174,500	2,349,000	-	1,044,000	2,088,000
Zirconium and Hafnium	Spent acid leachate from Zr alloy prod.	-	-	860,000	-	-	860,000	-	-	860,000	-	-	860,000	-	-	860,000
	Spent acid leachate from Zr metal prod.	-	-	1,600,000	-	-	1,600,000	-	-	1,600,000	-	-	1,600,000	-	-	1,600,000
	Leaching rinse water from Zr alloy prod.	-	21,000	52,000	-	21,000	52,000	-	18,900	46,800	-	18,900	46,800	-	16,800	41,600
	Leaching rinse water from Zr metal prod.	-	500,000	2,000,000	-	500,000	2,000,000	-	450,000	1,800,000	-	450,000	1,800,000	-	400,000	1,600,000

Note: EPA does not have enough information to determine whether Bromine, Gemstones, Iodine, Lithium and Lithium Carbonate, Soda Ash, Sodium Sulfate, and Strontium produce mineral processing wastes

PRIOR TREATMENT(PT) BASELINE AND OPTIONS

		PT Baseline			Option 1 (PT)			Option 2 (PT)			Option 3 (PT)			Option 4 (PT)		
		Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector		
Commodity	**Waste Stream**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**
Alumina and Aluminum	Cast house dust	2,864	2,864	2,864	12,409	12,409	12,409	4,773	4,773	4,773	4,773	4,773	4,773	2,864	2,864	2,864
	Electrolysis waste	-	4,313	8,625	-	18,688	37,375	-	7,188	14,375	-	7,188	14,375	-	4,313	8,625
Antimony	Autoclave filtrate	-	11,475	45,900	-	13,500	54,000	-	11,475	45,900	-	11,475	45,900	-	10,800	43,200
	Stripped anolyte solids	-	-	-	-	29	57	-	-	-	-	-	-	-	-	-
	Slag and furnace residue	-	10,500	21,000	-	10,500	21,000	-	10,500	21,000	-	10,500	21,000	-	10,500	21,000
Beryllium	Chip treatment wastewater	-	42,500	1,700,000	-	50,000	2,000,000	-	42,500	1,700,000	-	42,500	1,700,000	-	40,000	1,600,000
	Filtration discard	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000
Bismuth	Alloy residues	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000
	Spent caustic soda	-	763	3,000	-	1,983	7,800	-	763	3,000	-	763	3,000	-	458	1,800
	Electrolytic slimes	-	2	30	-	7	130	-	3	50	-	3	50	-	2	30
	Lead and zinc chlorides	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000	-	1,500	6,000
	Metal chloride residues	-	1,500	3,000	-	1,500	3,000	-	1,500	3,000	-	1,500	3,000	-	1,500	3,000
	Slag	-	500	10,000	-	500	10,000	-	500	10,000	-	500	10,000	-	500	10,000
	Spent electrolyte	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000
	Spent soda solution	-	763	3,000	-	1,983	7,800	-	763	3,000	-	763	3,000	-	458	1,800
	Waste acid solutions	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000	-	3,050	12,000
	Waste acids	-	43	170	-	50	200	-	43	170	-	43	170	-	40	160
Cadmium	Caustic washwater	-	238	4,750	-	618	12,350	-	238	4,750	-	238	4,750	-	143	2,850
	Copper and lead sulfate filter cakes	-	143	2,850	-	618	12,350	-	238	4,750	-	238	4,750	-	143	2,850
	Copper removal filter cake	-	143	2,850	-	618	12,350	-	238	4,750	-	238	4,750	-	143	2,850
	Iron containing impurities	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000
	Spent leach solution	-	238	4,750	-	950	19,000	-	950	19,000	-	238	4,750	-	143	2,850
	Lead sulfate waste	-	143	2,850	-	618	12,350	-	238	4,750	-	238	4,750	-	143	2,850
	Post-leach filter cake	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000
	Spent purification solution	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000
	Scrubber wastewater	-	143	2,850	-	950	19,000	-	950	19,000	-	238	4,750	-	143	2,850
	Spent electrolyte	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000	-	950	19,000
	Zinc precipitates	-	143	2,850	-	618	12,350	-	238	4,750	-	238	4,750	-	143	2,850
Calcium	Dust with quicklime	-	-	-	-	20	40	-	20	40	-	-	-	-	-	-
Coal Gas	Multiple effects evaporator concentrate	-	-	16,250	-	-	65,000	-	-	65,000	-	-	22,750	-	-	16,250
Copper	Acid plant blowdown	1,325,000	1,325,000	1,325,000	5,300,000	5,300,000	5,300,000	5,300,000	5,300,000	5,300,000	1,855,000	1,855,000	1,855,000	1,325,000	1,325,000	1,325,000
	WWTP sludge	-	750	1,500	-	3,000	6,000	-	1,050	2,100	-	1,050	2,100	-	750	1,500
Elemental Phosphorus	Andersen Filter Media	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460
	AFM rinsate	-	-	-	4,000	4,000	4,000	4,000	4,000	4,000	-	-	-	-	-	-
	Furnace scrubber blowdown	-	-	-	420,000	420,000	420,000	420,000	420,000	420,000	-	-	-	-	-	-
	Furnace Building Washdown	-	-	-	700,000	700,000	700,000	700,000	700,000	700,000	-	-	-	-	-	-
Fluorspar and Hydrofluoric Acid	Off-spec fluosilicic acid	-	1,875	11,250	-	7,500	45,000	-	2,625	15,750	-	2,625	15,750	-	1,875	11,250

PRIOR TREATMENT(PT) BASELINE AND OPTIONS

		PT Baseline			Option 1 (PT)			Option 2 (PT)			Option 3 (PT)			Option 4 (PT)		
		Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector		
Commodity	**Waste Stream**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**
Germanium	Waste acid wash and rinse water	-	935	3,400	-	1,100	4,000	-	935	3,400	-	935	3,400	-	880	3,200
	Chlorinator wet air pollution control sludge	-	85	320	-	106	400	-	90	340	-	90	340	-	85	320
	Hydrolysis filtrate	-	106	400	-	106	400	-	106	400	-	106	400	-	106	400
	Leach residues	-	5	10	-	5	10	-	5	10	-	5	10	-	5	10
	Spent acid/leachate	-	935	3,400	-	1,100	4,000	-	935	3,400	-	935	3,400	-	880	3,200
	Waste still liquor	-	106	400	-	106	400	-	106	400	-	106	400	-	106	400
Lead	Acid plant sludge	-	1,058	2,115	-	7,050	14,100	-	7,050	14,100	-	1,763	3,525	-	1,058	2,115
	Baghouse incinerator ash	300	3,000	30,000	300	3,000	30,000	300	3,000	30,000	300	3,000	30,000	300	3,000	30,000
	Slurried APC Dust	-	-	-	6,900	6,900	6,900	6,900	6,900	6,900	-	-	-	-	-	-
	Solid residues	-	29	59	-	195	390	-	195	390	-	49	98	-	29	59
	Spent furnace brick	-	-	-	990	990	990	990	990	990	-	-	-	-	-	-
	Stockpiled miscellaneous plant waste	340	74,800	153,000	400	88,000	180,000	400	88,000	180,000	340	74,800	153,000	320	70,400	144,000
	WWTP liquid effluent	-	-	-	-	1,760,000	3,520,000	-	1,760,000	3,520,000	-	-	-	-	-	-
	WWTP sludges/solids	-	-	-	380,000	380,000	380,000	380,000	380,000	380,000	-	-	-	-	-	-
Magnesium and Magnesia from Brines	Cast house dust	-	57	1,140	-	247	4,940	-	95	1,900	-	95	1,900	-	57	1,140
	Smut	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000
Mercury	Dust	-	4	7	-	4	7	-	4	7	-	4	7	-	4	7
	Quench water	-	9,625	105,000	-	38,500	420,000	-	38,500	420,000	-	9,625	105,000	-	5,775	63,000
	Furnace residue	-	39	77	-	39	77	-	39	77	-	39	77	-	39	77
Molybdenum, Ferromolybdenum, and Ammonium Molybdate	Flue dust/gases	-	126,500	495,000	-	126,500	495,000	-	126,500	495,000	-	126,500	495,000	-	126,500	495,000
	Liquid residues	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000
Platinum Group Metals	Slag	-	3	68	-	15	293	-	6	113	-	6	113	-	3	68
	Spent acids	-	855	3,000	-	855	3,000	-	855	3,000	-	855	3,000	-	855	3,000
	Spent solvents	-	855	3,000	-	855	3,000	-	855	3,000	-	855	3,000	-	855	3,000
Pyrobitumens, Mineral Waxes, and Natural Asphalts	Still bottoms	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000	-	23,000	90,000
	Waste catalysts	-	1,250	5,000	-	3,250	13,000	-	1,250	5,000	-	1,250	5,000	-	750	3,000
Rare Earths	Spent ammonium nitrate processing solution	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
	Electrolytic cell caustic wet APC sludge	-	-	-	-	105	2,100	-	-	-	-	-	-	-	-	-
	Process wastewater	5,950	5,950	5,950	7,000	7,000	7,000	7,000	7,000	7,000	5,950	5,950	5,950	5,600	5,600	5,600
	Spent scrubber liquor	-	200,000	800,000	-	250,000	1,000,000	-	250,000	1,000,000	-	212,500	850,000	-	200,000	800,000
	Solvent extraction crud	-	1,150	4,500	-	1,150	4,500	-	1,150	4,500	-	1,150	4,500	-	1,150	4,500
	Wastewater from caustic wet APC	-	200,000	800,000	-	250,000	1,000,000	-	250,000	1,000,000	-	212,500	850,000	-	200,000	800,000
Rhenium	Spent barren scrubber liquor	-	8	30	-	50	200	-	50	200	-	13	50	-	8	30

PRIOR TREATMENT(PT) BASELINE AND OPTIONS

		PT Baseline			Option 1 (PT)			Option 2 (PT)			Option 3 (PT)			Option 4 (PT)		
		Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector		
Commodity	**Waste Stream**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**
	Spent rhenium raffinate	-	44,000	88,000	-	44,000	88,000	-	44,000	88,000	-	44,000	88,000	-	44,000	88,000
Scandium	Spent acids	-	1,960	7,000	-	1,960	7,000	-	1,960	7,000	-	1,960	7,000	-	1,960	7,000
	Spent solvents from solvent extraction	-	490	1,750	-	1,274	4,550	-	490	1,750	-	490	1,750	-	294	1,050
Selenium	Spent filter cake	-	38	765	-	166	3,315	-	64	1,275	-	64	1,275	-	38	765
	Plant process wastewater	56,100	56,100	56,100	66,000	66,000	66,000	66,000	66,000	66,000	56,100	56,100	56,100	52,800	52,800	52,800
	Slag	-	204	4,080	-	255	5,100	-	217	4,335	-	217	4,335	-	204	4,080
	Tellurium slime wastes	-	38	765	-	166	3,315	-	64	1,275	-	64	1,275	-	38	765
	Waste solids	-	255	5,100	-	255	5,100	-	255	5,100	-	255	5,100	-	255	5,100
Synthetic Rutile	Spent iron oxide slurry	-	18,000	36,000	-	22,500	45,000	-	19,125	38,250	-	19,125	38,250	-	18,000	36,000
	APC dust/sludges	-	-	-	-	4,500	9,000	-	-	-	-	-	-	-	-	-
	Spent acid solution	-	-	-	-	4,500	9,000	-	-	-	-	-	-	-	-	-
Tantalum, Columbium, and Ferrocolumbium	Digester sludge	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000
	Process wastewater	37,500	37,500	37,500	97,500	97,500	97,500	37,500	37,500	37,500	37,500	37,500	37,500	22,500	22,500	22,500
	Spent raffinate solids	-	1,000	2,000	-	1,000	2,000	-	1,000	2,000	-	1,000	2,000	-	1,000	2,000
Tellurium	Slag	-	800	7,200	-	1,000	9,000	-	850	7,650	-	850	7,650	-	800	7,200
	Solid waste residues	-	1,000	9,000	-	1,000	9,000	-	1,000	9,000	-	1,000	9,000	-	1,000	9,000
	Waste electrolyte	-	1,000	20,000	-	1,000	20,000	-	1,000	20,000	-	1,000	20,000	-	1,000	20,000
	Wastewater	-	-	-	-	3,000	12,000	-	-	-	-	-	-	-	-	-
Titanium and Titanium Dioxide	Pickle liquor and wash water	-	1,148	2,805	-	1,350	3,300	-	1,148	2,805	-	1,148	2,805	-	1,080	2,640
	Scrap milling scrubber water	-	2,000	4,800	-	2,500	6,000	-	2,125	5,100	-	2,125	5,100	-	2,000	4,800
	Smut from Mg recovery	15	3,300	6,900	65	14,300	29,900	25	5,500	11,500	25	5,500	11,500	15	3,300	6,900
	Leach liquor and sponge wash water	323,000	408,000	493,000	380,000	480,000	580,000	323,000	408,000	493,000	323,000	408,000	493,000	304,000	384,000	464,000
	Spent surface impoundment liquids	-	429	1,680	-	1,115	4,368	-	429	1,680	-	429	1,680	-	257	1,008
	Spent surface impoundments solids	-	17,850	35,700	-	17,850	35,700	-	17,850	35,700	-	17,850	35,700	-	17,850	35,700
	Waste acids (Sulfate process)	200	40,000	78,000	200	40,000	78,000	200	40,000	78,000	200	40,000	78,000	200	40,000	78,000
	WWTP sludge/solids	-	210,000	420,000	-	210,000	420,000	-	210,000	420,000	-	210,000	420,000	-	210,000	420,000
Tungsten	Spent acid and rinse water	-	-	17,850	-	-	21,000	-	-	21,000	-	-	17,850	-	-	16,800
	Process wastewater	-	1,862	7,650	-	2,190	9,000	-	2,190	9,000	-	1,862	7,650	-	1,752	7,200
Uranium	Waste nitric acid from UO2 production	-	1,084	2,890	-	1,275	3,400	-	1,084	2,890	-	1,084	2,890	-	1,020	2,720
	Vaporizer condensate	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000
	Superheater condensate	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000	-	4,675	17,000
	Slag	-	-	-	-	1,275	5,100	-	-	-	-	-	-	-	-	-
	Uranium chips from ingot production	-	191	510	-	829	2,210	-	319	850	-	319	850	-	191	510
Zinc	Acid plant blowdown	-	-	-	39,000	39,000	39,000	-	-	-	-	-	-	-	-	-
	Waste ferrosilicon	-	1,275	2,550	-	5,525	11,050	-	2,125	4,250	-	2,125	4,250	-	1,275	2,550
	Process wastewater	1,275,000	1,275,000	1,275,000	3,315,000	3,315,000	3,315,000	1,275,000	1,275,000	1,275,000	1,275,000	1,275,000	1,275,000	765,000	765,000	765,000
	Discarded refractory brick	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000	-	500	1,000

PRIOR TREATMENT(PT) BASELINE AND OPTIONS

		PT Baseline			Option 1 (PT)			Option 2 (PT)			Option 3 (PT)			Option 4 (PT)		
		Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector			Treatment and Disposal Total Sector		
Commodity	**Waste Stream**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**	**Min.**	**Expect.**	**Max.**
	Spent cloths, bags, and filters	-	-	-	-	23	45	-	-	-	-	-	-	-	-	-
	Spent goethite and leach cake residues	-	-	-	4,500	4,500	4,500	-	-	-	-	-	-	-	-	-
	Spent surface impoundment liquids	1,606,500	1,606,500	1,606,500	1,890,000	1,890,000	1,890,000	1,606,500	1,606,500	1,606,500	1,606,500	1,606,500	1,606,500	1,512,000	1,512,000	1,512,000
	WWTP Solids	-	94	188	-	375	750	-	375	750	-	131	263	-	94	188
	Spent synthetic gypsum	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900	15,900
	TCA tower blowdown	-	44	88	-	125	250	-	44	88	-	44	88	-	31	63
	Wastewater treatment plant liquid effluent	-	1,109,250	2,218,500	-	1,305,000	2,610,000	-	1,109,250	2,218,500	-	1,109,250	2,218,500	-	1,044,000	2,088,000
Zirconium and Hafnium	Spent acid leachate from Zr alloy prod.	-	-	860,000	-	-	860,000	-	-	860,000	-	-	860,000	-	-	860,000
	Spent acid leachate from Zr metal prod.	-	-	1,600,000	-	-	1,600,000	-	-	1,600,000	-	-	1,600,000	-	-	1,600,000
	Leaching rinse water from Zr alloy prod.	-	17,850	44,200	-	21,000	52,000	-	17,850	44,200	-	17,850	44,200	-	16,800	41,600
	Leaching rinse water from Zr metal prod.	-	425,000	1,700,000	-	500,000	2,000,000	-	425,000	1,700,000	-	425,000	1,700,000	-	400,000	1,600,000

Note: EPA does not have enough information to determine whether Bromine, Gemstones, Iodine, Lithium and Lithium Carbonate, Soda Ash, Sodium Sulfate, and Strontium produce mineral processing wastes