associated with surface beneficiation and processing facilities at underground mines are similar to those associated with surface mining facilities.

(2) Materials Management Practices. Materials management practices for significant materials at the surface of underground mining facilities are similar to those materials management practices used at surface mining operations. However, waste rock or mill tailings are in some cases being returned to the mine as fill for the mined-out areas or may be directed to a disposal basin.

c. Placer Mining. Placer mining is used to mine alluvial sands and gravels containing valuable metallic minerals. Placer deposits are usually mined exclusively for gold material but smaller amounts of platinum, tin, and tungsten may also be recovered. There are three main placer mining techniques including dredge, hydraulic, and open cut methods.

(1) Industrial Activities. The industrial activities at dredging placer mines excavate underwater gold deposits by bucketline, dragline, or by suction. The excavation devices dig, wash, and screen gold values which are then recovered using gravity concentration methods. Hydraulic placer mines characteristically use high pressure water jets to excavate valueladen gravel banks. The most commonly used placer mining extraction method is the open cut. It involves stripping away topsoil and overburden to expose the auriferous gravels. The gold bearing gravels are excavated in sections and pushed to a placer wash plant for processing. Gravitational concentration is the common beneficiating technique at placer mines.

(2) Significant Materials. Significant materials generated at placer operations include overburden, mine development rock, ore, sub-ore piles, mine waste dumps, tailings ponds and piles. Potential natural constituents include mercury, arsenic, bismuth, antimony, thallium, pyrite, and pyrrhotite. After settling, the liquid portion of the slurry

is returned to the mill as process water and the remaining slurried waste is pumped to tailings. In placer operations, however, tailings are disposed of in streams or on land.

(3) Materials Management Practices. Settling ponds are used to manage process wastewaters and are in some cases being used to manage contaminated storm water runoff. Few materials management practices were indicated in the part 1 group applications.

d. Inactive Mine Sites. Inactive ore mining and dressing operations are those where industrial activities are no longer occurring. When active, mineral extraction could have occurred from surface mines, solution mines, placer operations, or underground mines. These sites are included in this section because significant materials may remain onsite. These materials, if exposed, are potential sources of storm water contamination. Until an inactive metals mine and/or beneficiation operation has been reclaimed under applicable State or Federal laws after December 17, 1990, the site is considered associated with an "industrial activity" and is subject to the conditions of this section. Due to the seasonal nature of this industry, mine sites can become temporarily inactive for extended periods of time. Temporarily inactive sites are not viewed the same as permanently inactive sites.

2. Pollutants Found in Storm Water **Discharges From Metal Mining**

The volume of storm water discharges and the type and concentrations of pollutants found in storm water discharges from active and inactive metal mining facilities will vary according to several factors. Such factors include: geographic location; hydrogeology; the physical and chemical characteristics of the ores extracted; the physical and chemical characteristics of the waste rock and overburden removed; how the ore was extracted (e.g., open pit, underground,

solution or dredging); the type of industrial activities occurring onsite (e.g., extraction, crushing, washing, milling, reclamation, etc.); the size of the operation; type, duration, and intensity of precipitation events; temperature ranges and variations; and the types of pollutant control measures used at the site. Each of these, and other factors will interact to influence the quantity and quality of storm water runoff. For example, air emissions (i.e., dust) may be a significant source of pollutants at some facilities, while roads constructed of waste rock may be a primary source at others. In addition, sources of pollutants other than storm water, such as illicit connections, spills, and other improperly dumped materials, may increase the pollutant loadings discharged into waters of the United States.

Based on the wide variety of industrial activities and significant materials at the facilities included in this sector, EPA believes it is appropriate to divide the metal mining (ore mining and dressing) industry into subsectors to properly analyze sampling data and determine monitoring requirements. As a result, this sector has been divided into the following subsectors: iron ore; copper ores; lead and zinc ores, gold and silver ores; ferroalloy ores, except vanadium; metal mining services; and miscellaneous metal ores (including uranium-radiumvanadium ores). Table G-2 below includes data for the eight pollutants that all facilities were required to monitor for under Form 2F. The table also lists those parameters that EPA has determined merit further monitoring.

A table has not been included for the following subsectors because less than 3 facilities submitted data in that subsector; iron ores; lead and zinc ores; gold and silver ores; ferroallov ores. except vanadium; metal mining services; and miscellaneous metal ores (including uranium-radium-vanadium ores).

TABLE G-2.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY COPPER ORE MINING FACILITIES SUBMITTING PART II SAMPLING DATA i (mg/L)

Pollutant Sample type	No. of facilities				No. of samples		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp ⁱⁱ	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
BOD ₅	4	1	7	1	11.0	18.0	0.0	18.0	27.0	18.0	11.0	18.0	43.6		81.9	
COD	4	2	7	4	234.7	360.0	0.0	160.0	630.0	740.0	160.0	270.0	1448.6	888.2	3835.9	1386.6
Nitrate + Nitrite Nitrogen	4	1	5	2	1.84	1.50	0.00	1.40	5.30	1.60	1.40	1.50	6.35	1.75	11.5	1.86
Total Kjeldahl Nitrogen	3	1	4	2	3.98	3.70	1.20	1.50	7.00	5.90	3.85	3.70	13.60	14.63	25.55	28.30
Oil & Grease	3	N/A	5	N/A	1.0	N/A	0.0	N/A	5.0	N/A	0.0	N/A		N/A		N/A
рН	5	N/A	13	N/A	N/A	N/A	4.5	N/A	8.2	N/A	7.8	N/A	9.7	N/A	10.7	N/A
Total Phosphorus	5	3	10	5	2.17	7.54	0.00	0.00	14.00	7.00	0.11	0.17	13.53	7.93	68.67	28.25
Total Suspended Solids	4	2	6	4	18113	580	0	330	100000	850	2135	570	350477	1159	4050366	1596

Applications that did not report the units of measurement for the reported values of pollutants were not included in these statistics. Values reported as non-detect or below detection limit were assumed to be 0. "Composite samples