and deposition of airborne particulate

pollutants other than storm water, such

matter. In addition, sources of

as illicit connections,<sup>92</sup> spills, and other improperly dumped materials, may increase the pollutant loadings discharged into waters of the United States.

Many of the part 2 group application data submittals did not identify individual site characteristics or sources of storm water pollutants which may be responsible for pollutant loadings. In addition, because the industry has been moving toward combined fuel generating facilities, the part 2 sampling data was reviewed in the aggregate.

Table O–1 lists potential pollutant source activities and related pollutants associated with steam electric power generating facilities. The primary and largest potential source of storm water pollutants from fossil-fueled steam electric generating facilities is ash refuse piles.

TABLE O-1.—INDUSTRIAL ACTIVITIES, POLLUTANT SOURCES, AND POLLUTANTS FOR STEAM ELECTRIC POWER		
GENERATING FACILITIES		

Activity	Pollutant source	Pollutant
Above Ground Liquid Storage Tank.	External corrosion and structural failure	Fuel, oil, heavy metals, ammonia, chlorine, sulfuric acid, sodium hydroxide, and other materials being stored.
	Installation problems	Fuel, oil, heavy metals, ammonia, chlorine, sulfuric acid, sodium hydroxide, and other materials being stored.
	Spills due to operator error	Fuel, oil, heavy metals, ammonia, chlorine, sulfuric acid, sodium hydroxide, and other materials being stored.
	Failure of piping systems	Fuel, oil, heavy metals, ammonia, chlorine, sulfuric acid, sodium hydroxide, and other materials being stored.
	Leaks or spills during pumping of liquids from barges, trucks, rail cars to a storage facility.	Fuel, oil, heavy metals, ammonia, chlorine, sulfuric acid, sodium hydroxide, and other materials being stored.
Vehicle and Equipment Main- tenance.	Parts cleaning	Oil, heavy metals, chlorinated solvents, acid/alkaline wastes, ethylene glycol.
	Spills of oil, degreasers, hydraulic fluids, transmission fluid, radiator fluids.	Oil, arsenic, heavy metals, organics, chlorinated solvents, ethylene glycol.
	Fluids replacement	Oil, arsenic, heavy metals, organics, fuel.
Fueling Operations	Spills & leaks during fuel delivery	Fuel, oil, heavy metals.
	Spills caused by "topping off" fuel tanks	Fuel, oil, heavy metals.
	Leaking storage tanks	Fuel, oil, heavy metals.
	Allowing rainfall on the fuel area or storm water to run onto the fuel area.	Fuel, oil, heavy metals.
Coal Handling Areas	Fugitive dust emissions from coal handling	Suspended solids, copper, iron, aluminum, nickel, and trace metals.
	Spills during delivery	Suspended solids, copper, iron, aluminum, nickel, and trace metals.
	Offsite tracking of coal dust	Suspended solids, copper, iron, aluminum, nickel, and trace metals.
Ash Handling Areas, Ash Landfills.	Spills during transfer of ash to landfills	Suspended solids, chromium, copper, iron, zinc, oil and grease, aluminum.
	Offsite tracking of ash	Suspended solids, chromium, copper, iron, zinc, oil and grease, aluminum.
Scrapyards, Refuse Sites	Discarded material	Fuel, oils, heavy metals.

The ash composition from oil, on a weight percent basis, is much lower than that of coal. Oil ash rarely exceeds 0.3 percent of the input oil whereas coal ash comprises from 3 to 30 percent of the coal. In general, the ash content increases with increasing asphaltic constituents in which the sulfur acts largely as a bridge between aromatic rings.

The many elements which may appear in oil ash deposits include

vanadium, sodium, and sulfur. Compounds containing these elements are found in almost every deposit in boilers fired by residual fuel oil and often constitute the major portion of these deposits. Oil ash, especially from plants using Venezuelan and certain Middle Eastern oil can contain significant amounts of nickel.

Some of the ash-forming constituents in the crude oil had their origin in animal and vegetable matter from which the oil was derived. The remainder is extraneous material resulting from contact of the crude oil with rock structures and salt brines or picked up during refining processes, storage, and transportation. Vanadium, iron, sodium, nickel, and calcium in fuel oil are common in rock strata, but elements including vanadium, nickel, zinc, and copper are believed to come from organic matter from which the petroleum was created.

<sup>&</sup>lt;sup>92</sup>Illicit connections are contributions of unpermitted non-storm water discharges to storm sewers from any of a number of sources including

sanitary sewers, industrial facilities, commercial establishments, or residential dwellings. The probability of illicit connections at steam electric

facilities is low yet it still may be applicable at some operations.