water or fish. The benchmarks are also viewed by EPA as a level, that if below, a facility represents little potential for water quality concern. As such, the benchmarks also provide an appropriate level to determine whether a facility's storm water pollution prevention measures are successfully implemented. The benchmark concentrations are not effluent limitations and should not be interpreted or adopted as such. These values are merely levels which EPA has used to determine if a storm water discharge from any given facility merits further monitoring to insure that the facility has been successful in implementing a storm water pollution prevention plan. As such these levels represent a target concentration for a facility to achieve through implementation of pollution prevention measures at the facility. Table 5 lists the parameter benchmark values.

As can be seen in Table 5, benchmark concentrations were determined based upon a number of existing standards or other sources to represent a level above which water quality concerns could arise. EPA has also sought to develop values which can realistically be measured and achieved by industrial facilities. Moreover, storm water discharges with pollutant concentrations occurring below these levels would not warrant further analytical monitoring due to their de minimis potential effect on water quality.

The primary source of benchmark concentrations is EPA's National Water Quality Criteria, published in 1986 (often referred to as the "Gold Book") For the majority of the benchmarks, EPA chose to use the acute aquatic life, fresh water ambient water quality criteria. These criteria represent maximum concentration values for a pollutant, above which, could cause acute effects on aquatic life such as mortality in a short period of time. Where acute criteria values were not available, EPA used the lowest observed effect level (LOEL) acute fresh water value. The LOEL values represent the lowest concentration of a pollutant that results in an adverse effect over a short period of time. These two acute freshwater values were selected as benchmark concentrations if the value was not below the approved method detection limit as listed in 40 CFR Part 136 and the value was not substantially above the concentration which EPA believes a facility can attain through the implementation of a storm water pollution prevention plan. These acute freshwater values best represent, on a national basis, the highest concentrations at which typical fresh

water species can survive exposures of pollutants for short durations (i.e., a storm discharge event).

Acute freshwater criteria do not exist for a number of parameters on which EPA received data. For these parameters, EPA selected benchmark values from several other references. The benchmark concentrations for five day biochemical oxygen demand (BOD₅) and for pH are determined based upon the secondary wastewater treatment regulations (40 CFR 133.102). EPA believes that the BOD₅ value of 30 mg/ L is a reasonable concentration below which adverse effects in receiving waters under wet weather flow conditions should not occur. EPA also believes, that given group application data on BOD₅, this value should be readily achievable by industrial storm water dischargers. The benchmark value for pH is a range of 6.0-9.0 standard units. EPA believes this level, given the group application data, is reasonably achievable by industrial storm water dischargers and represents and acceptable range within which aquatic life impacts will not occur. The benchmark concentration for chemical oxygen demand (COD) is based upon the State of North Carolina benchmark values for storm water discharges, and is a factor of four times the BOD₅ benchmark concentration. EPA has concluded that COD is generally discharged in domestic wastewater at four times the concentration of BOD₅ without causing adverse impacts on aquatic life. EPA selected the median concentration from the National Urban Runoff Program as the benchmark for total suspended solids (TSS) and for nitrate plus nitrite as nitrogen. EPA believes the median concentration, which is the mid-point concentration (half the samples are above this level and half are below) represents concentration above which water quality concerns may result. For TSS a value of 100mg/L is similar to the storm water benchmark used by North Carolina for storm water permits, and given the group application data, should be readily achievable by industry with implementation of BMPs, many of which are designed for the purpose of controlling TSS. EPA also believes, given the group application data, that there is a relationship between TSS and the amount of exposed industrial activity and that industrial activities even in arid western States should be able to implement BMPs that will accomplish this benchmark. EPA selected the storm water effluent limitation guideline for petroleum refining facilities as the benchmark for

oil and grease. Given the lack of an acute criteria, EPA selected the chronic fresh water quality criteria as the benchmark for iron. Water quality criteria for waterbodies in the State of North Carolina were used to determine benchmarks for total phosphorus and for fluoride. The concentration value for phosphorus was designed to prevent eutrophication of fresh waterbodies from storm water runoff. The fluoride value was designed by North Carolina to be protective of water quality, as was the manganese value developed by Colorado. EPA believes that each of these benchmark values represent a reasonable level below which water quality impacts should not occur and they therefore represent a useful level to assess whether a pollution prevention plan is controlling pollution in storm water discharges.

For several other parameters, EPA chose a benchmark value base on a numerical adjustment of the acute fresh water quality criteria. Where the acute water quality criteria was below the method detection level for a pollutant, EPA used the "minimum level" (ML) as the benchmark concentration to ensure that the benchmark levels could be measured by permittees. For a few pollutants minimum levels have been published and these were used. For other pollutants, minimum levels need to be calculated. EPA calculated the minimum levels using the methodology described in the draft "National Guidance for the Permitting, Monitoring, and Enforcement of Water Quality-based Effluent Limitations Set Below Analytical Detection/ Quantitation Levels" (Michael Cook, OWEC, March 18, 1994).

Additionally, several organic compounds (ethylbenzene, fluoranthene, toluene, and trichloroethylene) have acute fresh water quality criteria at substantially high concentrations, much higher than criteria developed for the protection of human health when ingesting water or fish. In addition, trichloroethylene is a human carcinogen. Therefore, EPA selected the human health criteria as benchmarks for these parameters. For dimethyl phthalate and total phenols, EPA selected benchmark concentrations based upon existing discharge limitations and compliance data (no industry had median concentrations above the selected benchmark for these parameters and therefore no industry sector is required to monitor for these two pollutants).

EPA conducted statistical analyses of the group Part 2 data for each parameter within every industry sector or subsector listed in Table 5. The