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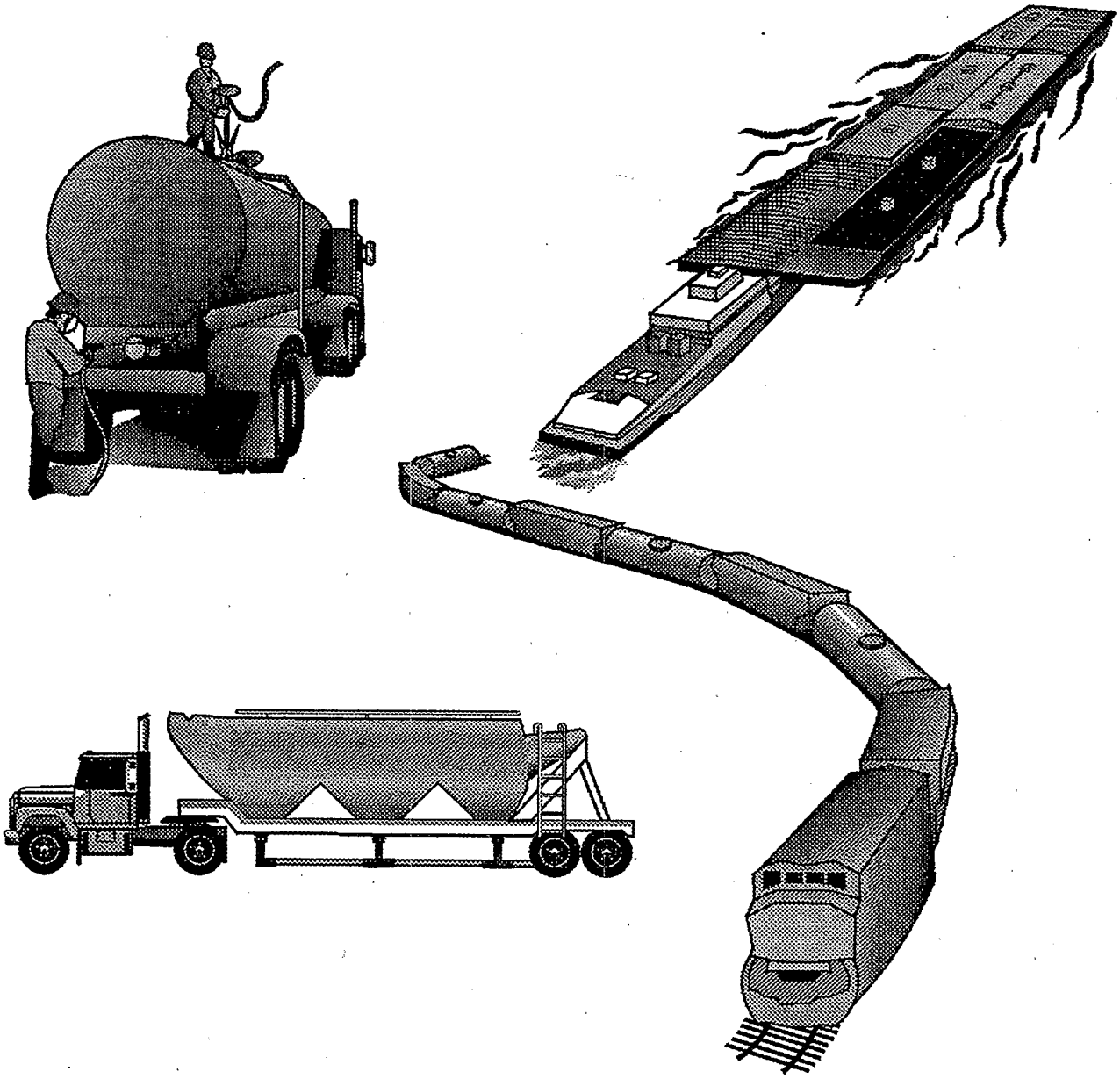
Statistical Support Document Of Proposed Effluent Limitations Guidelines And Standards For The Transportation Equipment Cleaning Category



Statistical Support Document of Proposed Effluent Limitations Guidelines and Standards for the Transportation Equipment Cleaning Category

(EPA-821-R-98-014)

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ABSTRACT

This document describes the statistical methodology used to develop effluent limitations, also presents tables of the data used to develop limits.

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CHAPTER 1
OVERVIEW OF ORGANIZATION AND CONTENTS OF DOCUMENT

This document describes the statistical analyses of concentration in effluent wastewater from transportation equipment cleaning facilities. These statistical analyses were used in developing the proposed effluent limitations guidelines and standards in the proposed rulemaking for the Transportation Equipment Cleaning Industry (TECI). Details of all statistical analyses conducted and data used in the analyses to support the effluent limitations guidelines and standards for the TECI are provided. This document is organized into six chapters and seven appendices. The following list summarizes the content of each chapter and appendix.

Chapter 1: Overview
— Describes the organization of the document and summarizes the contents of each chapter and appendix.

Chapter 2: Analytical Data Collection Efforts and Definition of Options
— Provides an overview of the analytical data collection efforts and defines the technology options.

Chapter 3: Description of Data Conventions
— Describes data conventions and how the data were treated, including aggregation and review.

Chapter 4: Statistical Methodology
— Describes the modified delta-lognormal distribution that was used to derive the proposed limitations.

Chapter 5: Estimation under the Modified Delta-Lognormal Distribution
— Describes the estimation of long-term averages (LTAs) and variability factors (VFs) at the facility and pollutant levels.

Chapter 6: Derivation of the Proposed Limitations
— Describes the derivation of the proposed limitations.

Appendices A.1 - A.7: Listing of Daily Data After Aggregation of Grabs and Duplicates
— Provides listings by subcategory of the concentration data from each facility used to characterize the treatment in the regulated options.

Appendices B.1 - B.7: Listing of Summary Statistics for Regulated Pollutants
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Appendix D: Assignment of Pollutants to Groups and Fractions
— Provides the group and fraction of all regulated pollutants.

Appendices E.1 - E.7: Listing of Pollutant-Level Long-Term Averages, Variability Factors, and Limitations

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Appendix F: Percentile Estimates for Flow per Tank Type Cleaned

— Provides the 50th, 75th, 90th, 95th, and 99th percentile estimates for flow per tank type cleaned.

Appendices G.1 - G.9: Listing of Mass Based Limitations

— Provides the flow per tank type cleaned, concentration based limitations, conversion factors, and mass based limitations for each pollutant, by subcategory.

CHAPTER 2
ANALYTICAL DATA COLLECTION EFFORTS AND DEFINITION OF OPTIONS

2.1 EPA Wastewater Sampling

The data used to calculate the proposed effluent guidelines were collected from the EPA wastewater sampling effort. Data from six of the eighteen facilities sampled were used to derive pollutant-specific mass based limitations for the following subcategories: Barge/Chemical & Petroleum Direct and Indirect, Rail/Chemical Direct and Indirect, Truck/Chemical Direct and Indirect, and Food Grade Direct (consisting of Truck/Food, Rail/Food, and Barge/Food).

Data used for the Barge/Chemical & Petroleum Direct and Indirect subcategories were collected between March 1995 and June 1995 and consist of eight sampling episodes at two direct discharging facilities. Limitations for the Barge/Chemical & Petroleum Indirect subcategory were based on data collected prior to biological treatment from the two direct discharging facilities. Each sampling episode represents one sampling day, resulting in four sampling days per facility.

Data used for the Rail/Chemical Direct and Indirect subcategories were collected between April 1995 and June 1995 and consist of four sampling episodes at one indirect discharging facility. Each sampling episode represents one day. Limitations for several regulated pollutants in the Rail/Chemical Direct subcategory were estimated by applying a percent removal to the samples collected from the Rail/Chemical Indirect subcategory. Section 3.3 provides the equation used to calculate effluent concentrations based on percent removal.

Data for the Truck/Chemical Direct and Indirect subcategories were collected on three consecutive days at two indirect discharging facilities. Limitations for several regulated pollutants in the Truck/Chemical Direct subcategory were estimated by applying a percent removal to the samples collected from the Truck/Chemical Indirect subcategory (see Section 3.3). Sampling was conducted in January 1995 and February 1995.

For the Food Grade Direct subcategory, data were collected from April 1995 to June 1995 and consist of four sampling episodes at one facility. Each sampling episode represents one sampling day.

Table 2-1 provides a summary of the number of episodes, facilities, and sampling days per facility, by subcategory.

Table 2-1.
Number of Sampling Episodes, Facility, and Sampling Days by Subcategory

Subcategory	Number of Episodes	Number of Facilities Sampled	Number of Sampling Days per Facility
Barge/Chemical & Petroleum	8	2	4
Rail/Chemical	4	1	4
Truck/Chemical	2	2	3
Food Grade	4	1	4

2.2 Definition of Proposed Subcategories and Options

EPA is proposing to subcategorize the TECI point source category into 11 subcategories based on types of cargos carried and transportation mode. The proposed technology options that EPA has selected include Best Practical Technology (BPT), Best Conventional Pollutant Control Technology (BCT), Best Available Technology (BAT), New Source Performance Standards (NSPS), Pretreatment Standards for Existing Sources (PSES), and Pretreatment Standards for New Sources (PSNS). For detailed definitions of these options, refer to section 1 in the *TECI Technical Development Document for Proposed Effluent Guidelines and Standards for the Transportation Equipment Cleaning Category* (EPA-821-B98-011). Sections 2.2.1 and 2.2.2 provide summaries of the subcategories and technology options selected, respectively.

2.2.1 Subcategorization Summary

Subcategory A: Truck/Chemical
Subcategory A applies to TEC facilities that clean tank trucks and intermodal tank containers where 10 percent or more of the total tanks cleaned at that facility in an average year contained chemical cargos.

Subcategory B: Rail/Chemical
Subcategory B applies to TEC facilities that clean rail tank cars where 10 percent or more of the total tanks cleaned at that facility in an average year contained chemical cargos.

Subcategory C: Barge/Chemical & Petroleum
Subcategory C applies to TEC facilities that clean tank barges or ocean/sea tankers where 10 percent or more of the total tanks cleaned at that facility in an average year contained chemical and/or petroleum cargos.

Subcategory D: Truck/Petroleum
Subcategory D applies to TEC facilities that clean tank trucks and intermodal tank containers where 80 percent or more of the total tanks cleaned at that facility in an average year contained petroleum cargos, but excludes facilities that are in Subcategory A: Truck/Chemical or Subcategory F: Truck/Food.

Subcategory E: Rail/Petroleum
Subcategory E applies to TEC facilities that clean rail tank cars where 80 percent or more of the total tanks cleaned at that facility in an average year contained petroleum cargos, but excludes facilities in Subcategory B: Rail/Chemical or Subcategory G: Rail/Food.

Subcategory F: Truck/Food
Subcategory F applies to TEC facilities that clean tank trucks and intermodal tank containers where 10 percent or more of the total tanks cleaned at that facility in an average year contain food grade cargos, but excludes facilities that clean 10 percent or more of tanks containing chemical cargos.

Subcategory G: Rail/Food
Subcategory G applies to TEC facilities that clean rail tank cars where 10 percent or more of the total tanks cleaned at a facility in an average year contained food grade cargos, but excludes facilities that clean 10 percent or more of tanks containing chemical cargos.

Subcategory H: Barge/Food
Subcategory H applies to TEC facilities that clean tank barges or ocean/sea tankers where 10 percent or more of the total tanks cleaned at a facility in an average year contained food grade cargos, but excludes facilities that clean 10 percent or more of tanks containing chemical cargos.

Subcategory I: Truck/Hopper
Subcategory I applies to TEC facilities that clean closed-top hopper trucks which transport dry bulk commodities that are not chemical commodities.

Subcategory J: Rail/Hopper
Subcategory J applies to TEC facilities that clean closed-top hopper rail cars which transport dry bulk commodities that are not chemical commodities.

Subcategory K: Barge/Hopper
Subcategory K applies to TEC facilities that clean closed-top hopper barges which transport dry bulk commodities that are not chemical commodities.

2.2.2 Technology Options Selected

BPT, BCT, BAT, and NSPS

For the Truck/Chemical Direct subcategory, EPA is proposing to establish BPT, BCT, BAT, and NSPS effluent limitations based on Option II which consists of the following: Flow Reduction, Equalization, Oil/Water Separation, Chemical Oxidation, Neutralization, Coagulation, Clarification, Biological Treatment, Activated Carbon Adsorption, and Sludge Dewatering.

For the Rail/Chemical Direct subcategory, EPA is proposing to set BPT, BCT, and BAT regulations based on technology Option I and NSPS regulations based on technology Option III. Option I consists of the following: Flow Reduction, Oil/Water Separation, Equalization, Biological Treatment, and Sludge Dewatering. Option III includes Flow Reduction, Oil/Water Separation, Equalization, Dissolved Air Flotation (with Flocculation and pH Adjustment), Biological Treatment, Organo-Clay/Activated Carbon Adsorption, and Sludge Dewatering.

EPA is proposing to set BPT, BCT, BAT, and NSPS regulations for the Barge/Chemical & Petroleum Direct subcategory based on technology Option I, which includes Flow Reduction, Oil/Water Separation, Dissolved Air Flotation, Filter Press, Biological Treatment, and Sludge Dewatering.

For the Truck/Food, Rail/Food, and Barge/Food Direct subcategories, EPA proposes to establish BPT, BCT, and NSPS effluent limitations based on Option II, which includes Flow Reduction, Oil/Water Separation, Equalization, Biological Treatment, and Sludge Dewatering.

EPA is not proposing to establish BPT, BCT, BAT, or NSPS regulations for the Truck/Petroleum and Rail/Petroleum Subcategories or for any of the Hopper subcategories.

PSES and PSNS

EPA is proposing to establish PSES and PSNS based on Option II for the Truck/Chemical Indirect subcategory. Option II consists of the following: Flow Reduction, Equalization, Oil/Water Separation, Chemical Oxidation, Neutralization, Coagulation, Clarification, Activated Carbon Adsorption, and Sludge Dewatering.

For the Rail/Chemical Indirect subcategory, EPA is proposing to establish PSES based on Option I and PSNS based on Option III. Option I includes Flow Reduction and Oil/Water Separation, and Option III consists of Flow Reduction, Oil/Water Separation, Equalization, Dissolved Air Flotation (with Flocculation and pH Adjustment), Organo-Clay/Activated Carbon Adsorption, and Sludge Dewatering.

For the Barge/Chemical & Petroleum Indirect subcategory, EPA is proposing to establish PSNS based on Option II which consists of Flow Reduction, Oil/Water Separation, Dissolved Air Flotation, In-Line Filter Press, Biological Treatment, and Sludge Dewatering.

EPA proposes not to establish PSES or PSNS for any of the Food, Petroleum, or Hopper subcategories. **Table 2-2** displays all selected technology options by subcategory.

Table 2-2.
Selected Technology Options by Subcategory

Subcategory	Option
Truck/Chemical Direct	BPT, BCT, BAT, NSPS (Option II)
Truck/Chemical Indirect	PSES, PSNS (Option II)
Rail/Chemical Direct	BPT, BCT, BAT (Option I)
	NSPS (Option III)
Rail/Chemical Indirect	PSES (Option I)
	PSNS (Option III)
Barge/Chemical & Petroleum Direct	BPT, BCT, BAT, NSPS (Option I)
Barge/Chemical & Petroleum Indirect	PSNS (Option II)
Food Grade Direct	BPT, BCT, NSPS (Option II)

CHAPTER 3
DESCRIPTION OF DATA CONVENTIONS

This chapter discusses the types of data in the TEC analytical database and the hierarchy and procedures for aggregating multiple sampling observations within a sampling day.

3.1 Data Review

The EPA wastewater sampling data in the analytical database were thoroughly reviewed and validated by EPA's Sample Control Center (SCC). During this review, the integrity of each sample was assessed to ensure that all specifications of the sampling protocol were met. The reviewers determined that some samples should be excluded from the analyses. Samples with flags of "EXCLUDE" or "DETECTED," which indicate that a value was detected but the concentration value was not recorded, were excluded from analyses.

Also during the data review, some samples were qualified with a greater than (>) sign, indicating that the reported concentration value is considered a lower limit of the actual value. This is because the reported concentration was outside the range of the analytical method. When possible, these samples were diluted and reanalyzed. Otherwise these samples were handled as right-censored samples and excluded from all calculations.

3.2 Data Types

The TEC analytical database, developed from the SCC, contains the following three different types of samples delineated by certain qualifiers in the database:

- **Non-censored (NC):** a measured value, i.e., a sample measured above the level at which the detection decision was made.
- **Non-detect (ND):** samples for which analytical measurement did not yield a concentration above the sample-specific detection limit.
- **Right-censored (RC):** these samples were qualified with a greater than (>) sign, signifying that the reported value is considered a lower limit of the actual concentration. All RC values were excluded from analyses because these values could not be quantified with certainty.

3.3 Data Modifications

For some pollutants it was necessary to modify the reported concentrations prior to aggregating daily samples. One modification was made to concentrations reported below the Method Detection Limit (MDL). If a pollutant was not classified in the Metals chemical group, then any concentrations reported as less than the MDL were set equal to the MDL and labeled as ND. Also, modifications to the concentrations in the Truck/Chemical Direct and Rail/Chemical Direct subcategories were necessary since data were available only for indirect discharging facilities. The demonstrated biological

treatment percent removal was applied to the untreated concentrations using the following equation:

$$Final\ Conc. = Conc. * (100 - \%Removal)$$

If the final concentration was less than the MDL it was set equal to the MDL. If no additional percent removal was provided by the biological treatment unit, the reported concentration was used.

3.4 Data Aggregation

Data aggregation for the TEC analytical data was performed at two levels. This section discusses the different levels and approaches for data aggregation, including multiple grab samples (one or more samples collected for a particular sampling point over time, assigned different sample numbers, and could not be physically composited) and field duplicates (one or more samples collected for a particular sampling point at approximately the same time, assigned different sample numbers, and flagged as duplicates for a single episode number).

3.4.1 Data Aggregation Across Multiple Grab Samples

The first type of data aggregation performed was for multiple grab samples. Within the TEC database, Hexane Extractable Material (HEM) and Silica Gel Treated-Hexane Extractable Material (SGT-HEM) were reported as concentrations of multiple grab samples taken during one-day sampling periods. Since LTAs and limitations were based on daily concentrations, multiple observations on a single day at the same sample point were averaged. When all of the samples in a set were NC, i.e., detected samples, the arithmetic average of the samples was straightforward. However, when one or more of the samples were not detected, or ND, multiple grab samples were aggregated within each sampling day/sample point combination using the methods identified in **Table 3-1**.

Table 3-1.
Method for Averaging Multiple Grab Samples

If Observations are:	Label of "Average"	Value of "Average"
All NC	NC	$\Sigma NC_i/n$
All ND	ND	Maximum Detection Limit
NC and ND 1. Max. NC > Max. Detection Limit	NC	$(\Sigma NC_i + \Sigma ND_i)/n$
2. Max. NC ≤ Max. Detection Limit	ND	Max. Detection Limit

n = number of grab samples per day

3.4.2 Aggregation of Field Duplicates

Another type of data aggregation for the TEC data was performed due to the identification of field duplicates in the database. The field duplicates are defined as one or more samples collected for a particular sampling point at approximately the same time, assigned different sample numbers, and flagged as duplicates for a single episode number/sampling point. Duplicates were collected for purposes of quality assurance/quality control. **Table 3-2** presents the methods used to aggregate duplicates.

Table 3-2.
Method for Averaging Field Duplicate Samples

If Observations are:	Label of "Average"	Value of "Average"
Both NC	NC	$\Sigma NC_i/2$
Both ND	ND	Maximum Detection Limit
NC and ND 1. NC > Detection Limit 2. NC ≤ Detection Limit	 NC ND	 (NC + ND)/2 Detection Limit

NC = non-censored values
ND = non-detected values

If a sample had both multiple grabs and field duplicates, the multiple grabs were aggregated first. Listings of daily data and summary statistics following aggregation of grabs and field duplicates are presented in **Appendices A.1 - A.7 and B.1 - B.7**, respectively.

CHAPTER 4
STATISTICAL METHODOLOGY: MODIFIED DELTA-LOGNORMAL MODEL

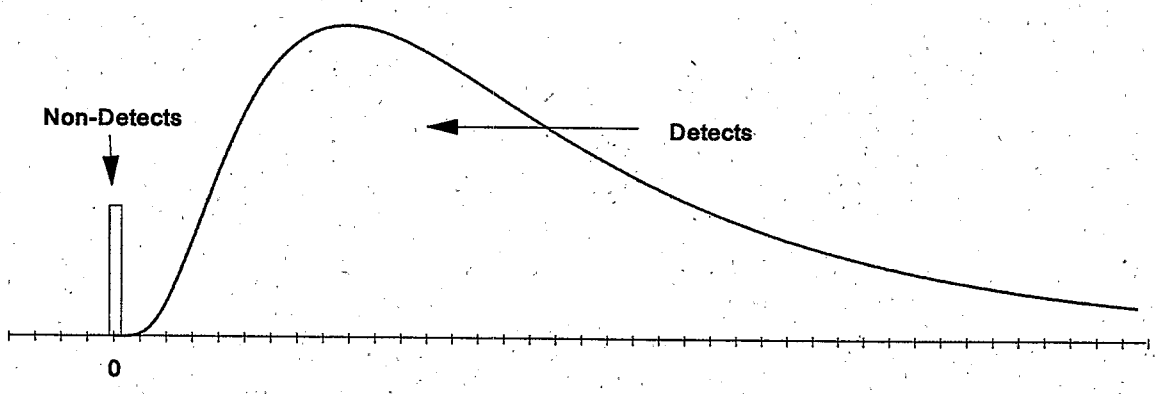
4.1 Basic Overview of Delta-lognormal Distribution

The lognormal distribution is often appropriate for modeling effluent data. However, the presence of NDs and very low concentration measurements in the TEC effluent data led to the consideration of a modification to the lognormal distribution in modeling such data for several reasons. First, the lognormal model assumes that all concentration values are positively-valued. Second, the actual values of NDs are not known, though each ND has a concentration somewhere between zero and the reported detection limit. In this sense, ND measurements represent, in statistical terms, what are known as censored samples.

In general, censored samples are measurements for which the exact value is not known but are bounded either by an upper or lower numerical limit. Non-detects qualify in this framework as left-censored samples, which have an upper bound at the detection limit and a lower bound at zero. To model NDs as left-censored samples under a strictly lognormal density model, it is necessary to assume that the exact (but unknown) values of these measurements follow the same lognormal distributional pattern as the rest of the detected measurements and that they are positively-valued (i.e., greater than zero).

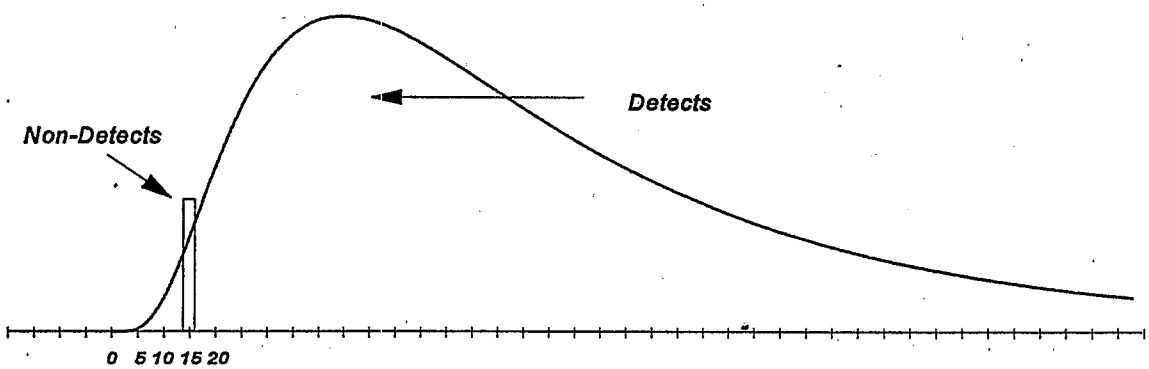
Therefore, two reasonably simple modifications to the lognormal density model have been used by EPA for several years. The first modification is known as the classical delta-lognormal model (**Figure 4-1**), first used in economic analysis to model income and revenue patterns (see Atchison and Brown, 1955). In this adaptation of the simple lognormal density, the model is expanded to include zero amounts. To do this, all positive (dollar) amounts are grouped together and fit to a lognormal density. Then all zero amounts are segregated into another group of measurements representing a discrete distributional "spike" at zero. The resulting mixed distribution, combining a continuous density portion with a discrete-valued spike, is known as the delta-lognormal distribution. The delta in the name refers to the percentage of the overall distribution contained in the spike at zero; that is, the percentage of zero amounts.

Figure 4-1.
Delta-lognormal Model



Researchers at EPA (see Kahn and Rubin, 1989) further adapted the classical delta-lognormal model ("adapted model") to account for ND measurements in the same fashion that zero measurements were handled in the original delta-lognormal. Instead of zero amounts and non-zero, positive amounts, the data consisted of NDs and detects. Rather than assuming that NDs represented a spike of zero concentrations, these samples were allowed to have a single positive value, usually equal to the minimum level of the analytical method (**Figure 4-2**). Since each ND was assigned the same positive value, the distributional spike in this adapted model was located not at zero, but at the minimum level. This adaptation is appropriate since it is known that the NDs are some value greater than zero. This adapted model was used in developing limitations for the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) and pesticides manufacturing rulemaking.

Figure 4-2.
Adapted Delta-lognormal Model



In the adapted delta-lognormal model, the delta again referred to those measurements contained in the discrete spike, this time representing the proportion of ND values observed within the data set. By using this approach, computation of estimates for the population mean and variance could be done easily by hand, and NDs were not assumed to follow the same distributional pattern as the detected measurements. The adapted delta-lognormal model can be expressed mathematically as follows:

$$Pr\ (U \le u) = \begin{bmatrix} (1-\delta)\ \Phi\left[(\log(u) - \mu)/\sigma\right] & \text{if} \quad 0 < u < D \\ \delta + (1-\delta)\ \Phi\left[(\log(D) - \mu)/\sigma\right] & \text{if} \quad u = D \\ \delta + (1-\delta)\ \Phi\left[(\log(u) - \mu)/\sigma\right] & \text{if} \quad u > D \end{bmatrix} \tag{4.1}$$

where δ represents the true proportion of NDs (or the probability that any randomly drawn measurement will be an ND), D equals the minimum level value of the discrete spike assigned to all NDs, $\Phi(\cdot)$ represents the standard normal cumulative distribution function, and μ and σ are the parameters of the lognormal density portion of the model. This model assumes that all non-detected values have a single detection limit D.

It is also possible to represent the adapted delta-lognormal model in another mathematical form, one in which it is particularly easy to derive formulas for the expected value (i.e., LTA) and variance of the model. In this case, a random variable distributed according to the adapted delta-lognormal distribution can be represented as the stochastic combination of three other independent random variables. The

first of these variables is an indicator variable, I_u, equal to one when the measurement u is an ND and equal to zero when u is a detected value. The second variable, X_D, represents the value of an ND measurement (discrete). In the adapted delta-lognormal, this variable is always a constant equal to the concentration value assigned to each ND (i.e., equal to D in the adapted delta-lognormal model). In general, however, X_D need not be a constant, as will be seen below in the modified delta-lognormal model. The final random variable, X_C, represents the value of a detected measurement and is distributed according to a lognormal distribution (continuous) with parameters μ and σ.

Using this formulation, a random variable from the adapted delta-lognormal model can be written as

$$U = I_u X_D + (1 - I_u) X_C \tag{4.2}$$

and the expected value of U is then derived by substituting the expected value of each quantity in the right-hand side of the equation. Because the variables I_u, X_D, and X_C are mutually independent, this leads to the expression

$$E(U) = \delta E(X_D) + (1-\delta)E(X_C) = \delta D + (1-\delta)\exp(\mu + 0.5\sigma^2) \tag{4.3}$$

where again δ is the probability that any random measurement will be ND and the exponentiated expression is the familiar mean of a lognormal distribution. In a similar fashion, the variance of the adapted delta-lognormal model can be established by squaring the expression for U above, taking expectations, and subtracting the square of E(U) to get

$$Var(U) = E(U^2) - [E(U)]^2 = \delta Var(X_D) + (1-\delta)Var(X_C) + \delta(1-\delta)[E(X_D) - E(X_C)]^2. \tag{4.4}$$

Since, in the adapted delta-lognormal formulation, X_D is a constant, this expression can be reduced to the following:

$$Var(U) = (1-\delta)\exp(2\mu + \sigma^2)[\exp(\sigma^2) - (1-\delta)] + \delta(1-\delta)D[D - 2\exp(\mu + 0.5\sigma^2)]. \tag{4.5}$$

In order to estimate the adapted delta-lognormal mean and variance from a set of observed sample measurements, it is necessary to derive sample estimates for the parameters δ, μ, and σ. δ is typically estimated by the observed proportion of NDs in the data set. μ and σ are estimated using the log values of the detected samples where μ is estimated using the arithmetic mean of the log-detected measurements, and σ is estimated using the standard deviation of these same log values; NDs are not included in the calculations. Once the parameter estimates are obtained, they are used in the formulas above to derive the estimated adapted delta-lognormal mean and variance.

To calculate effluent limitations and/or standards, it is also necessary to estimate upper percentiles from the underlying data model. Using the delta-lognormal formulation above in equation (4.1), letting U_α represent the $100*\alpha^{th}$ percentile of random variable U, and adopting the standard notation of z_s for the sth percentile of the standard normal distribution, an arbitrary delta-lognormal percentile can be expressed as the following:

$$U_\alpha = \begin{cases} \exp(\mu + \sigma z_{\alpha/1-\delta}) & \text{if} \quad (1-\delta)\Phi((\log(D)-\mu)/\sigma) \geq \alpha \\ D & \text{if} \quad \delta + (1-\delta)\Phi((\log(D)-\mu)/\sigma) \geq \alpha \\ \exp(\mu + \sigma z_{\alpha-\delta/1-\delta}) & \text{if} \quad \delta + (1-\delta)\Phi((\log(D)-\mu)/\sigma) < \alpha \end{cases} \tag{4.6}$$

The daily maximum limitations are established on the basis of an estimated upper 99th percentile from the underlying data model, so that 0.99 would be substituted for α in the above expression. To derive the daily VF for the 99th percentile based on the adapted delta-lognormal model, divide $U_{.99}$ in the expression above by the previous formula for the LTA, namely $U_{.99}/E(U)$.

4.2 Motivations for Modifications to the Adapted Delta-Lognormal Model

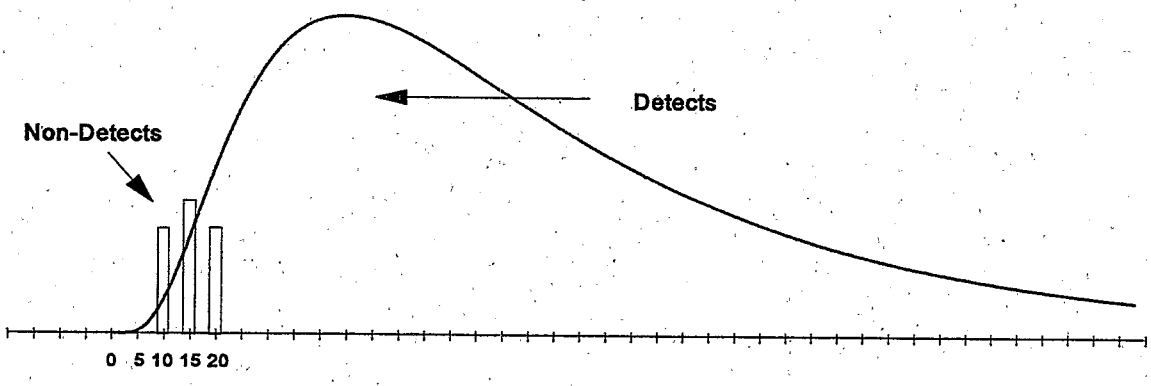
While the adapted delta-lognormal model has been used successfully for years by EPA in a variety of settings, the model makes two key assumptions about the observed data that are not fully satisfied within the TEC analytical database. First, the discrete spike portion of the adapted delta-lognormal model is a fixed, single-valued probability mass associated (typically) with all the ND measurements. If all ND samples in the TEC database had roughly the same reported detection limit, this assumption would be adequately satisfied. However, the detection limits reported were sample-specific and, therefore, varied as a result of factors such as dilution. Because of this variation in detection limits, a single-valued discrete spike could not adequately represent the set of ND measurements observed in the TEC database and a modification to the model was considered.

In addition, the adapted delta-lognormal model sets all NC values below the detection to the Minimum Level of the analytical method. For example, if the Minimum Level for N-Dodecane was .10 ug/l, then any NC samples reported below .10 ug/l were set to .10 ug/l. There were a few instances in the TEC analytical studies where an NC value was reported below the Minimum Level of the analytical method.

4.2.1 Modification of the Discrete Spike

To appropriately modify the adapted delta-lognormal model for the observed TEC database, a modification was made to the discrete, single-valued spike representing ND measurements. Because ND samples have varying detection limits, the spike of the delta-lognormal model has been replaced by a discrete distribution made up of multiple spikes. Each spike in this modification is associated with a distinct detection limit observed in the TEC database. Thus, instead of assigning all NDs to a single, fixed value, as in the adapted model, NDs can be associated with multiple values depending on how the detection limits vary (**Figure 4-3**).

Figure 4-3.
Modified Adapted Delta-lognormal Model



In particular, because the detection limit associated with an ND sample is considered to be an upper bound on the true value, which could range conceivably from zero up to the detection limit, the modified delta-lognormal model used here assigns each ND sample to its reported detection limit.

Once each ND has been associated with its reported detection limit, the discrete "delta" portion of the modified model is estimated in a way similar to the adapted delta-lognormal distribution, only now multiple spikes are constructed and linked to the distinct detection limits observed in the data set. In the adapted model, the parameter δ is estimated by computing the proportion of NDs. In the modified model, δ again represents the proportion of NDs, but is divided into the sum of smaller fractions, δ_i, each representing the proportion of NDs associated with a particular and distinct detection limit. Thus it can be written as

$$\delta = \sum_i (\delta_i). \tag{4.7}$$

If D_i equals the value of the ith smallest distinct detection limit in the data set, and let the random variable X represent a randomly chosen ND sample, then the discrete distribution portion of the modified delta-lognormal model can be mathematically expressed as

$$Pr(X_D \le x) = \sum_{i:D_i \le x} \delta_i. \tag{4.8}$$

The mean and variance of this discrete distribution can be calculated using the following formulas:

$$E(X_D) = \frac{1}{\delta}\sum_i \delta_i D_i \quad \textit{and} \quad Var(X_D) = \frac{1}{\delta^2}\sum_i \sum_{i<j} \sum_j \delta_i \delta_j (D_j - D_i)^2. \tag{4.9}$$

It is important to recognize that, while replacing the single discrete spike in the adapted delta-lognormal distribution with a more general discrete distribution of multiple spikes increases the complexity of the model, the discrete portion with multiple spikes plays a role in limitations and standards development identically parallel to the single spike case and offers flexibility for handling multiple observed detection limits.

CHAPTER 5
ESTIMATION UNDER THE MODIFIED DELTA-LOGNORMAL MODEL

Once the modifications to the adapted delta-lognormal distribution are made, it is possible to fit a wide variety of observed effluent data sets to the modified model. Multiple detection limits for NDs can be handled. The same basic framework can be used even if there are no ND values or censored data.

Combining the discrete portion of the model with the continuous portion, the cumulative probability distribution of the modified delta-lognormal model can be expressed as follows, where D_n denotes the largest distinct detection limit observed among the NDs and the first summation is taken over all those values, D_i, that are less than u.

$$Pr(U \le u) = \begin{cases} \sum_{i:D_i<u} \delta_i + (1-\delta)\Phi\left[(\log(u)-\mu)/\sigma)\right] & if \quad u<D_n \\ \delta + (1-\delta)\Phi\left[(\log(u)-\mu)/\sigma)\right] & if \quad u \ge D_n \end{cases} \tag{5.1}$$

Again combining the discrete and continuous portions of the modified model, the expected value of the random variable U can be derived as a weighted sum of the expected values of the discrete and continuous lognormal portions of the distribution. This follows because the modified delta-lognormal random variable U can be expressed again as a combination of three other independent variables, that is,

$$U = I_u X_D + (1 - I_u) X_C \tag{5.2}$$

where this time X_D represents a random ND from the discrete portion of the model, X_C represents a random detected measurement from the continuous lognormal portion, and I_u is an indicator variable signaling whether any particular random measurement is detected or not. Then the expected value and variance of U have forms somewhat similar to the standard delta-lognormal model, namely

$$E(U) = \sum_i \delta_i D_i + (1-\delta)\exp(\mu + 0.5\,\sigma^2) \tag{5.3}$$

$$Var(U) = \frac{\sum_{i<j}\sum_j \delta_i \delta_j (D_i - D_j)^2}{\delta} + (1-\delta)\exp(2\mu + \sigma^2)(\exp(\sigma^2) - 1) + \delta(1-\delta)\left[\frac{\sum_i \delta_i D_i}{\delta} - \exp(\mu + 0.5\sigma^2)\right]^2 \tag{5.4}$$

where the D_i equals the individual detection limits for the NDs, the δ_i are the corresponding proportions of non-detected values with detection limit D_i, and $\delta = \Sigma\delta_i$.

5.1 Facility-Specific Estimates

5.1.1 Estimation of Facility-Specific LTAs

For the purposes of estimating facility-specific LTAs (equal to the expected value in equation (5.3)), EPA chose to divide the TEC data sets into two groups based on their size (number of samples) and the type of samples in the subset because the computations differ for each group. The groups were defined as follows:

Group 1: Less than 2 NC samples or less than 4 total samples.

Group 2: Two or more NC samples and 4 or more total samples.

For Group 1, the LTAs were calculated as the arithmetic average of the samples, since the sample sizes for either the discrete portion or the continuous lognormal portion of the data were too small to allow distributional assumptions to be made. Specifically, Group 1 contained all data subsets with all NDs or only one detect. Sample-specific detection limits were substituted as the values associated with non-detectable samples. Group 1 also contained all data for the Truck/Chemical subcategory since no more than three samples were collected for each facility.

For Group 2, the LTAs were calculated using the procedures outlined in the preceding section using equation (5.3) and the Maximum Likelihood Estimates (MLEs) for μ and σ.

5.1.2 Estimation of Facility-Specific VFs

After determining estimated LTA values for each pollutant, facility, and option combination, EPA developed 1-day VFs for all regulated pollutants, and 4-day VFs for the Conventional pollutants, which include Hexane Extractable Material, BOD 5-day, Total Suspended Solids, and Total Organic Carbon.

The data were divided into the same two computation groups presented in Section 5.1.1 for purposes of estimating VFs. For Group 1, upper percentiles and VFs could not be computed using the modified delta-lognormal methodology. Several data subsets belong in Group 1, and therefore have missing 95th and 99th percentiles and VFs. For Group 2, the estimates of the parameters for the modified delta-lognormal distribution of the data were calculated using maximum likelihood estimation in the log-domain. Upper percentiles and VFs were calculated using these estimated parameters. Calculation of these VFs are described in Section 5.3.

5.1.2.1 Estimation of Facility-Specific 1-day VFs

The 1-day VFs are a function of the LTA, E(U), and the 99th percentile. An iterative approach was used in finding the 99th percentile of each data subset using the modified delta-lognormal methodology by first defining $D_0=0$, $\delta_0=0$, and $D_{k+1} = \infty$ as boundary conditions, where D_i equals the ith smallest detection limit, and δ_i is the associated proportion of NDs at the ith detection limit. A cumulative distribution function, p, for each data subset was computed as a step function ranging from 0 to 1. The general form, for a given value c, is

$$p = \sum_{i=0}^{m} \delta_i + (1-\delta)\ \Phi\left[\frac{\log(c)-\hat{\mu}}{\hat{\sigma}}\right], \quad D_m \le c < D_{m+1},\ m=0,1,\ldots k \tag{5.5}$$

where Φ is the standard normal cumulative distribution function. The following steps were completed to compute the estimated 99th percentile of each data subset:

1. k values of p at $c=D_m$, $m=1,\ldots k$ were computed and labeled p_m.

2. The smallest value of m, such that $p_m \ge 0.99$, was determined and labeled as p_j. If no such m existed, steps 3 and 4 were skipped and step 5 was computed instead.

3. Computed $p^* = p_j - \delta_j$.

4. If $p^* < 0.99$, then $P_{99} = D_j$,
   else if $p^* \ge 0.99$, then

$$\hat{P}99 = \exp\left[\hat{\mu} + \Phi^{-1}\left[\frac{\left(0.99 - \sum_{i=0}^{j-1} \delta_i\right)}{(1-\delta)}\right]\hat{\sigma}\right]. \tag{5.6}$$

5. If no such m exists, such that $p_m \ge 0.99$ ($m=1,\ldots k$), then

$$\hat{P}99 = \exp\left[\hat{\mu} + \Phi^{-1}\left[\frac{0.99-\delta}{(1-\delta)}\right]\hat{\sigma}\right]. \tag{5.7}$$

The daily VF, VF1, was then calculated as

$$VF1 = \frac{\hat{P}99}{\hat{E}(U)} \tag{5.8}$$

5.1.2.2 Estimation of Facility-Specific 4-day VFs

Since EPA is assuming for costing purposes that the Conventional pollutants will be monitored weekly (approximately four times a month), EPA calculated a VF for monthly averages based on the distribution of 4-day averages. In order to calculate the 4-day VF, the assumption was made that the approximating distribution of $\bar{U}_4$, the sample mean for a random sample of four independent concentration values, also is derived from this modified delta-lognormal distribution, with the same mean as the distribution of the concentration values. The mean of this distribution of 4-day averages is

$$E(\bar{U}_4) = \delta_4 E(\bar{X}_4)_D + (1-\delta_4)E(\bar{X}_4)_C \tag{5.9}$$

where $(X_4)_D$ denotes the mean of the discrete portion of the distribution of the average of four independent concentration values (i.e., when all observations are not detected), and $(X_4)_C$ denotes the

mean of the continuous lognormal portion of the distribution.

First, it is assumed that the probability of detection (δ) on each of the four days is independent of that on the other days, and are therefore not correlated such that $\delta_4 = \delta^4$. Also, since

$$E(\bar{X}_4)_D = E(X_D)$$

then

$$E(\bar{U}_4) = \delta^4 \sum_{i=1}^{k} \frac{\delta_i D_i}{\delta} + (1-\delta^4)\exp(\mu_4 + 0.5\sigma^2_4) \tag{5.10}$$

and since $E(\bar{U}_4) = E(U)$, then

$$\mu_4 = \log\left[\frac{E(U) - \delta^3 \sum_{i=1}^{k} \delta_i D_i}{(1-\delta^4)}\right] - 0.5\sigma^2_4. \tag{5.11}$$

The expression for σ^2_4 was derived from the following relationship:

$$Var(\bar{U}_4) = \delta_4 Var((\bar{X}_4)_D) + (1-\delta_4)Var((\bar{X}_4)_C) + \delta_4(1-\delta_4)[E(\bar{X}_4)_D - E(\bar{X}_4)_C]^2. \tag{5.12}$$

Since

$$Var((\bar{X}_4)_D) = \frac{Var(X_D)}{4}, \quad E(\bar{X}_4)_D = E(X_D), \quad and \quad \delta_4 = \delta^4 \tag{5.13}$$

then

$$Var(\bar{U}_4) = \delta^4 \frac{Var(X_D)}{4} + (1-\delta^4)Var((\bar{X}_4)_C) + \delta^4(1-\delta^4)[E(X_D) - E(\bar{X}_4)_C]^2. \tag{5.14}$$

This further simplifies to

$$\begin{aligned} Var(\bar{U}_4) = {} & \frac{\delta^4 \sum_{i=1}^{k} \sum_{\substack{j=1 \\ i<j}}^{k} \delta_i \delta_j (D_i - D_j)^2}{4\delta^2} + (1-\delta^4)\exp(2\mu_4 + \sigma^2_4)[\exp(\sigma^2_4) - 1] \\ & + \delta^4(1-\delta^4)\left[\sum_{i=1}^{k} \frac{\delta_i D_i}{\delta} - \exp(\mu_4 + 0.5\sigma^2_4)\right]^2 \end{aligned} \tag{5.15}$$

and furthermore,

$$\exp(\sigma^2_4)-1 = \frac{\left[Var(\bar{U}_4) - \frac{\delta^2 \sum_{i=1}^{k} \sum_{i<j}^{k} \delta_i \delta_j (D_i - D_j)^2}{4} - \delta^2(1-\delta^4)\left[\sum_{i=1}^{k} \delta_i D_i - \delta \exp(\mu_4 + 0.5\sigma^2_4)\right]^2\right]}{(1-\delta_4)\exp(2\mu_4 + \sigma^2_4)}. \tag{5.16}$$

Then, from (5.10) above,

$$\exp(\mu_4 + 0.5\sigma^2_4) = \frac{(E(\bar{U}_4) - \delta^3 \sum_{i=1}^{k} \delta_i D_i)}{(1-\delta^4)} = \frac{(E(U) - \delta^3 \sum_{i=1}^{k} \delta_i D_i)}{(1-\delta^4)}, \quad \text{since } E(\bar{U}_4) = E(U) \tag{5.17}$$

and letting

$$\eta = E(U) - \delta^3 \sum_{i=1}^{k} \delta_i D_i, \quad \text{then,} \quad \exp(\mu_4 + 0.5\sigma^2_4) = \frac{\eta}{(1-\delta^4)}. \tag{5.18}$$

Furthermore,

$$\sigma^2_4 = \log\left[1 + \frac{\left[Var(\bar{U}_4) - \frac{\delta^2 \sum_{i=1}^{k} \sum_{i<j}^{k} \delta_i \delta_j (D_i - D_j)^2}{4} - \delta^2(1-\delta^4)\left(\sum_{i=1}^{k} \delta_i D_i - \frac{\delta \eta}{(1-\delta^4)}\right)^2\right]}{\frac{(1-\delta^4)\eta^2}{(1-\delta^4)^2}}\right]. \tag{5.19}$$

Since $Var(\bar{U}_4) = Var(U)/4$, then, by rearranging terms,

$$\sigma^2_4 = \log\left[1 + \frac{(1-\delta^4)Var(U)}{4\eta^2} - \frac{(1-\delta^4)\delta^2 \sum_{i=1}^{k} \sum_{i<j}^{k} \delta_i \delta_j (D_i - D_j)^2}{4\eta^2} - \frac{\delta^2\left[\sum_{i=1}^{k} \delta_i D_i (1-\delta^4) - \delta\eta\right]^2}{\eta^2}\right]. \tag{5.20}$$

Thus, estimates of μ_4 and σ_4 were derived by using estimates of $\delta_1, \ldots \delta_k$ (sample proportion of NDs at observed detection limits $D_1, \ldots D_k$), μ (MLE of logged values), and σ^2 (MLE logvariance with sample bias adjustment) in the equations above.

In finding the estimated 95th percentile of the average of four observations, four NDs, not all at the same detection limit, an average can be generated that is not necessarily equal to D_1, $D_2, \ldots,$ or D_k. Consequently, more than k discrete points exist in the distribution of the 4-day averages. For example, the average of four NDs at k=2 detection limits are at the following discrete points with the associated

probabilities:

i	D^*_i	δ^*_i
1	D_1	δ_1^4
2	$(3D_1+D_2)/4$	$4\delta_1^3\delta_2$
3	$(2D_1+2D_2)/4$	$6\delta_1^2\delta_2^2$
4	$(D_1+3D_2)/4$	$4\delta_1\delta_2^3$
5	D_2	δ_2^4

In general, when all four observations are not detected, and when k detection limits exist, the multinomial distribution can be used to determine associated probabilities; that is,

$$Pr\left[\bar{U}_4 = \frac{\sum_{i=1}^{k} u_i D_i}{4}\right] = \frac{4!}{u_1!\,u_2!\ldots u_k!}\prod_{i=1}^{k}\delta_i^{u_i}. \tag{5.21}$$

The number of possible discrete points, k^*, for k=1,2,3,4, and 5 are given below:

k	k^*
1	1
2	5
3	15
4	35
5	70

To find the estimated 95th percentile of the distribution of the average of four observations, the same basic steps (described in Section 5.1.2.1) as used for the 99th percentile of the distribution of daily observations were followed, with the following changes:

1. Change P_{99} to P_{95}, and 0.99 to 0.95.
2. Change D_m to D_m^*, the weighted averages of the detection limits.
3. Change δ_i to δ_i^*.
4. Change k to k^*, the number of possible discrete points based on k detection limits.
5. Change the estimates of δ, μ, and σ to estimates of δ^4, μ_4, and σ_4, respectively.

Then, the estimate of the 95th percentile 4-day mean VF is:

$$VF4 = \frac{\hat{P}95}{\hat{E}(U)}, \quad since \quad E(\bar{U}_4) = E(U).$$

Appendices C.1 - C.7 display facility-level LTAs, 1-day VFs, and 4-day VFs by subcategory, option, and pollutant.

5.2 Pollutant-Specific Estimates

5.2.1 Estimation of Pollutant-Specific LTAs

After estimating the facility-specific LTAs for each pollutant and option by subcategory, as described in section 5.1.1, pollutant-specific LTAs were calculated. Pollutant-specific LTAs provide one number for all facilities within a subcategory and option. Within each subcategory and option combination, the pollutant-specific LTAs were calculated as the median of the facility-specific LTAs for that pollutant. The median is the midpoint of the values ordered (i.e., ranked) from smallest to largest. If there is an odd number of values (with n=number of values), then the value of the (n+1)/2 ordered observation is the median. If there are an even number of values, then the two values of the n/2 and [(n/2)+1] ordered observations are arithmetically averaged to obtain the median value. Since data for all subcategory and option combinations exist for only one or two facilities, the median pollutant-specific LTAs equal the mean pollutant-specific LTAs.

If, for example, the facility-specific LTAs for SGT-HEM in Option I of the Rail/Chemical Indirect subcategory are:

Facility	LTA
A	25.0 mg/l
B	45.0 mg/l
C	29.0 mg/l

then ordered values are:

Order	Facility	LTA
1	A	25.0 mg/l
2	C	29.0 mg/l
3	B	45.0 mg/l

and the pollutant-specific LTA for Option I is the median of the ordered values, or 29.0 mg/l. Since there were a maximum of two facilities in each subcategory and option combination, consider the above example but exclude Facility C. Then the pollutant-specific LTA is calculated by averaging the concentrations for Facility A and Facility B, or (25+45)/2 = 35 mg/l.

5.2.2 Estimation of Pollutant-Specific VFs

5.2.2.1 Estimation of Pollutant-Specific 1-day VFs

After the facility-specific VFs were estimated for each pollutant and option by subcategory, as described in section 5.1.2.1, the pollutant-specific VFs were calculated. Pollutant-specific VFs provide an estimate of the average variability for the pollutant across all facilities within a subcategory and option. The pollutant-specific 1-day VF was the mean of the facility-specific daily VF for that pollutant in the subcategory and option combination.

5.2.2.2 Estimation of Pollutant-Specific 4-day VFs

After the facility-specific 4-day VFs were estimated for each pollutant and option by subcategory, as described in section 5.1.2.2, the pollutant-specific 4-day VF was calculated. The pollutant-specific 4-day VF was the mean of the facility-specific 4-day VF for that pollutant in the subcategory and option

combination. For pollutants not belonging to a group or fraction (see Section 5.3), the pollutant-specific 1-day and 4-day VFs were used to calculate 1-day and 4-day limitations, as discussed in Chapter 6.

5.3 Estimation of Group-Level and Fraction-Level VFs

This section describes the estimation of group-level and fraction-level VFs by subcategory and option. Each group contains pollutants that are chemically similar and, therefore, have similar treatability by the treatment option in consideration. These groups were further aggregated by the type of fraction used in the chemical analysis. **Appendix D** shows the assignment of pollutants to groups and fractions. Chapter 6 describes how the group-level and fraction-level VFs were used to calculate limitations. For some pollutants, including all pollutants in the Truck/Chemical Direct and Indirect subcategories, VFs were transferred because there were not enough total samples collected to assume a delta-lognormal distribution and estimate VFs at the group-level or fraction-level (see section 5.4).

5.3.1 Estimation of Group-Level 1-day VFs

After calculating pollutant-specific 1-day VFs, as described in sections 5.2.2.1 and 5.2.2.2, the group-level 1-day VFs were calculated. Group-level 1-day VFs were the median of the pollutant-specific 1-day VFs. If, for example, in Rail/Chemical Indirect Option I the pollutant-specific 1-day VFs in the N-Paraffins group are:

Pollutant	1-day VF
N-Dodecane	6.4
N-Eicosane	5.3
N-Tetracosane	2.1
N-Octadecane	8.2

then the ordered values are:

Order	Pollutant	1-day VF
1	N-Tetracosane	2.1
2	N-Eicosane	5.3
3	N-Dodecane	6.4
4	N-Octadecane	8.2

Then the group-level VF is the median of the ordered values (i.e. the average of the 2nd and 3rd ordered values): $(5.3+6.4)/2 = 5.85$.

These group-level VFs were used in the calculation of limitations. Group-level 4-day VFs were not calculated since the proposed monthly limitations only cover Conventional pollutants, which do not belong to a group. **Table 5-1** displays the group-level 1-day VFs by subcategory and technology option.

Table 5-1.
Group-level 1-day VFs by Subcategory and Option

Subcategory	Option	Group	1-day VF (ug/l)
Barge/Chemical & Petroleum Direct	I	Metals	2.84
Barge/Chemical & Petroleum Indirect	II	PAHS	11.20
	II	Metals	7.44
Rail/Chemical Direct	I	N-Paraffins	3.28
	I	PAHS	5.39
	I	Metals	4.48
	I	Ketones, Aliphatic I	1.10
	III	PAHS	5.39
	III	Metals	2.76
	III	Ketones, Aliphatic I	2.00
Rail/Chemical Indirect	I	N-Paraffins	7.56
	I	PAHS	5.39
	I	Metals	4.48
	III	N-Paraffins	8.37
	III	PAHS	5.39
	III	Ketones, Aliphatic I	2.90

For some group and technology option combinations, there were not enough non-censored data available to calculate 1-day VFs. In these cases, fraction-level 1-day VFs were calculated as explained in the next section. Group-level VFs and fraction-level VFs could not be calculated for pollutants in the Truck/Chemical Direct & Indirect subcategories, due to insufficient data at the facility level. In the Food Grade Direct subcategory all regulated pollutants are Conventionals and are not grouped, therefore no group-level VFs exist.

5.3.2 Estimation of Fraction-Level 1-day VFs

Fraction-level 1-day VFs were the median of the group-level 1-day VFs for the groups that used the fraction in the chemical analysis. For example, suppose that the group-level 1-day VFs for the fraction Base-Neutrals in Rail/Chemical Indirect Option I are:

Group	1-day VF
N-Paraffins	5.9
PAHS	6.5
Phthalates	3.0

then the ordered values are:

Order	Group	1-day VF
1	Phthalates	3.0
2	N-Paraffins	5.9
3	Phthalates	6.5

Then the fraction-level 1-day VF is the median of the ordered values, or 5.9.

Fraction-level VFs were used in the calculation of limitations if the group-level VFs could not be estimated. **Table 5-2** presents daily fraction-level VFs by subcategory and technology option.

Table 5-2.
Fraction-level 1-day VFs by Subcategory and Option

Subcategory	Option	Fraction	1-day VF (ug/l)
Barge/Chemical & Petroleum Direct	I	Metals	2.84
Barge/Chemical & Petroleum Indirect	II	Base-Neutrals	11.20
	II	Metal	7.44
Rail/Chemical Direct	I	Base-Neutrals	4.33
	I	Metal	4.48
	I	Volatile	1.10
	III	Base-Neutrals	5.39
	III	Metal	2.76
	III	Volatile	2.00
Rail/Chemical Indirect	I	Base-Neutrals	6.47
	I	Metal	4.48
	III	Base-Neutrals	6.88
	III	Volatile	2.90

For some fraction and technology option combinations, there were not enough non-censored data available to calculate fraction-level VFs. In these cases, 1-day VFs were transferred from other technology options or subcategories, as described in Section 5.4.

5.4 Transfer of 1-day and 4-day VFs

If, for a pollutant in a selected subcategory and technology option, group-level or fraction-level 1-day VFs could not be calculated, it was necessary to transfer 1-day VFs from other technology options or subcategories. **Table 5-3** presents the group (or pollutant if no group exists), subcategory, and

technology options with missing VFs and the technology option and subcategory from which the 1-day VFs were transferred.

Table 5-3.
Subcategory, Option, and Group Combinations with VF Transfers

Subcategory	Group/Pollutant	Option	Transferred From
Rail/Chemical Indirect	N-Paraffins*	I	Rail/Chemical Indirect Option III
Rail/Chemical Direct	N-Paraffins*	I	Rail/Chemical Indirect Option III
	BOD 5-day	I, III	Barge/Chemical & Petroleum Direct Option I
Barge/Chemical & Petroleum Indirect	SGT-HEM	II	Barge/Chemical & Petroleum Indirect Option IV.
Barge/Chemical & Petroleum Direct	N-Paraffins*	I	Barge/Chemical & Petroleum Direct Option III
	Aromatics	I	Barge/Chemical & Petroleum Direct Option III
	Phthalates	I	Barge/Chemical & Petroleum Direct Option III
	PAHS	I	Barge/Chemical & Petroleum Direct Option III
	SGT-HEM	I	Barge/Chemical & Petroleum Direct Option III
Food Grade Direct	Hexane Extractable Material	II	Food Grade Direct Option I

*N-Paraffins transferred from Option III to Option I due to improperly operating organo-clay unit used in NSPS for pollutants in this group.

In several subcategories, variability factors were transferred from options that are not regulated. These include: Barge/Chemical & Petroleum Indirect Option IV which consists of Flow Reduction, Oil/Water Separation, and Dissolved Air Flotation; Barge/Chemical & Petroleum Direct Option III which consists of: Flow Reduction, Oil/Water Separation, and Dissolved Air Flotation; and Food Grade Direct Option I which consists of Flow Reduction, Oil/Water Separation, Equalization, and Sludge Dewatering.

Truck/Chemical Indirect

Since sampling for the Truck/Chemical Indirect subcategory was conducted for only three days, there were not enough data to calculate 1-day VFs at the pollutant-level, group-level, or fraction-level. As such, VFs for Truck/Chemical Indirect were transferred from Rail/Chemical Indirect. The following steps were followed to transfer 1-day VFs from Rail/Chemical Indirect to Truck/Chemical Indirect.

1. The group-level VFs from Rail/Chemical Indirect Option III regulated pollutants were transferred to Truck/Chemical Indirect PSES and PSNS Option II.

2. If the group was not regulated in Rail/Chemical Indirect Option III, the Option III fraction-level VFs were transferred to Truck/Chemical Indirect PSES and PSNS Option II.

3. If neither the group nor the fraction is regulated in Rail/Chemical Indirect Option III, all pollutants in the list of Rail/Chemical Indirect POCs for the groups (and then fraction if group is not available) with missing VFs were added to the list of pollutants. Then, the group-level VFs for the Rail/Chemical Option III were recalculated and transferred to Truck/Chemical Indirect PSES and PSNS Option II.

4. If the VF was still missing, as in the case of the Metals, the VFs were transferred from Rail/Chemical Indirect Option II. Rail/Chemical Indirect Option II consists of the following: Flow Reduction, Oil/Water Separation, Equalization, Dissolved Air Flotation (with Flocculation and pH Adjustment), and Sludge Dewatering.

Truck/Chemical Direct

As in the Truck/Chemical Indirect subcategory, sampling was conducted for three days. Therefore, 1-day VFs were transferred from Rail/Chemical Direct Option II in the following order:

1. The group-level VFs from Rail/Chemical Direct Option II regulated pollutants were transferred to Truck/Chemical Direct BPT, BCT, BAT, and NSPS Option II. Rail/Chemical Direct Option II consists of the following: Flow Reduction, Oil/Water Separation, Equalization, Dissolved Air Flotation (with Flocculation and pH Adjustment), Biological Treatment, and Sludge Dewatering.

2. If the group was not regulated in Rail/Chemical Direct Option II, the Option II fraction-level VFs were transferred to Truck/Chemical Direct BPT and BAT Option II.

3. If neither the group nor the fraction was regulated in Rail/Chemical Direct Option II, all pollutants in the list of Rail/Chemical Direct POCs for the groups (and then fraction if group is not available) with missing VFs were added to the list of pollutants. The group-level VFs for Rail/Chemical Direct Option II were recalculated and transferred to Truck/Chemical Direct BPT, BCT, BAT, and NSPS Option II.

4. For BOD 5-day, the VFs were transferred from Barge/Chemical & Petroleum Direct BPT, BAT, and NSPS Option I.

CHAPTER 6
DERIVATION OF THE PROPOSED LIMITATIONS

The proposed daily and monthly maximum limitations are presented in grams/tank. These limitations are referred to as mass based limitations. EPA is proposing mass based effluent guideline limitations and standards in order to prevent dilution of effluent wastewater and to contribute to water conservation. Mass based limits were calculated as the product of the pollutant-specific concentration based limitation, median flow per tank type cleaned, and a conversion factor. This chapter describes the methods used to derive the proposed daily and monthly mass based limitations.

6.1 Steps Used to Derive Concentration Based Limitations

The derivation of the concentration based daily maximum limitations used the pollutant-specific LTAs and the group-level daily VFs. Daily maximum limitations for Conventionals were based on the pollutant-specific LTA and 1-day VF. Monthly limitations were calculated for the Conventional pollutants which do not belong to a chemical group. Thus, the derivation of the concentration based maximum for monthly average limitations used the pollutant-specific LTAs and the pollutant-specific 4-day VFs.

Listed below are the steps that were followed in order to derive the concentration based limitations. **Appendices E.1 - E.7** provide, by subcategory, listings of the concentration based pollutant-level limitations with the LTAs and VFs used to derive the final limitations. Also included in these listings is a variable labeled 'V.F. Type,' which indicates whether group-level, fraction-level, or transferred VFs were used.

Step 1: The facility-specific LTAs and 1-day and 4-day VFs were calculated for all facilities. Calculation of VFs was only performed when the facility had four or more observations with two or more distinct detected values (i.e., Group 2).

Step 2: For each option in the subcategory, the median of the facility-specific LTAs and the mean of the facility-specific 1-day and 4-day VFs were calculated to provide pollutant-specific LTAs and 1-day and 4-day VFs.

Step 3: The group-level 1-day VF was calculated using the median of the pollutant-specific 1-day VFs for the pollutants within each group.

Step 4: If the group-level 1-day VF could not be calculated, the fraction level 1-day VF was calculated as the median of the group-level 1-day VF. If the fraction-level 1-day VF could not be calculated, a VF transfer (see Section 5.4) was conducted at the group-level or the fraction-level, if necessary.

Step 5: In most cases, the daily limitations for a pollutant were calculated using the product of the pollutant-specific LTA and the group-level 1-day VFs. If the group level 1-day VF could not be estimated or transferred, then the product of the pollutant-specific LTA and the fraction-level 1-day VF was used in calculating the limitation. If the pollutant did not belong to a group or fraction, the daily limitation was calculated using the product of the pollutant-specific LTA and the pollutant-specific 1-day VF. Monthly limitations were calculated using the product of the pollutant-specific LTA and the pollutant-specific 4-day VF.

6.2 Estimated Median Flow per Tank Type Cleaned

The estimated median flow per tank type cleaned was calculated for the following subcategories: Rail/Chemical, Truck/Chemical, Barge/Chemical, Truck/Food, Rail/Food, and Barge/Food. These estimates were based on flow values reported by tank type cleaned, which were extracted from the TECI Detailed Questionnaire (DQ) distributed to sampled facilities in 1994. Flow was defined as the gallons of TEC wastewater generated per day for each wastewater stream. **Table 6-1** displays the estimated median flow per tank type cleaned for each subcategory.

Table 6-1.
Estimated Median Flow per Tank Type Cleaned

Subcategory	Type of Tank Cleaned	Estimated Median Value (gals/tank)
Rail/Chemical	Rail	2091
Barge/Chemical	Barge	4857
Truck/Chemical	Truck	605
Truck/Food	Truck	790
Rail Tank/Food	Rail	4500
Barge/Food	Barge	4500

Section 6.2.1 describes the methods used to derive the estimated median flow per tank type cleaned for a subcategory.

6.2.1 Statistical Methods for Estimating Median Flow Values and Confidence Intervals About the Estimates

The first step in calculating the estimated median flow value was to determine the value of the 50th percentile. A percentile is the value in an ordered set of measurements such that p% of the measures lie below that value. For example, consider a facility that has cleaned the following tanks in one day:

Tank	1	2	3	4	5	6	7	8	9	10
Flow (gal/tank)	500	3500	200	100	1400	1600	3200	4000	1200	5300

If the tanks (obs) are ordered from the smallest to largest value, the result would be as follows:

Obs	1	2	3	4	5	6	7	8	9	10
Flow (gal/tank)	100	200	500	1200	1400	1600	3200	3500	4000	5300

With the ordered set of observations, the next step is to estimate the cumulative probability such that

With the ordered set of observations, the next step is to estimate the cumulative probability such that the probability of observing a particular flow less than a given flow value using the empirical data is known. The following table displays the calculated probability (prob) of observing each flow and the cumulative probability (cum) of observing each flow.

Obs	1	2	3	4	5	6	7	8	9	10
Flow (gal/tank)	100	200	500	1200	1400	1600	3200	3500	4000	5300
Prob	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cum	.1	.2	.3	.4	.5	.6	.7	.8	.9	1

With this table, it is possible to determine the value such that p% of the measures lie below that value. For example, the median or 50th percentile for this data set is estimated by averaging flow for observations 5 and 6 which gives (1400+1600)/2 = 1500 gal/tank. Note that the median is not the value of the flow where the cumulative percent equals .5, since the cumulative probability of observing a flow value is equal to but not greater than .5. The first instance where 50% of the flow values lie below a particular flow value is somewhere between the flow values of observations 5 and 6, as presented in the table above. In this example each flow value has an equal probability of being selected (prob=.1), and therefore, averaging observations 5 and 6 represents the estimated median flow value.

Based on responses to the TECI DQ, percentiles were calculated for flow values. As discussed in the *Final Transportation Equipment Cleaning Industry Detailed Questionnaire Sample Design Report* (DCN # T11,110), only a sample of facilities received a DQ and each was assigned a survey weight (i.e. the facility used in the example above could represent other facilities in addition to itself). Consequently, each flow value from the DQ does not represent an equal percent of the population flow values, but rather a weighted percent. From these weighted flow values, percentiles were determined.

Changing the example presented above, consider that the flows were collected under a design-based probability sampling scheme. Under this sampling scheme, consider that these 10 observations were selected from a population of 200 facilities divided into 4 groups, or strata (e.g. facilities that are operationally similar may be grouped together or stratified). The sizes of each group are 75 (I), 60 (II), 40 (III), and 25 (IV) with 3, 3, 2, and 2 sampled within each group, respectively. For each group, the weights are calculated as the number of observations within the group divided by the number sampled. Thus, the weights for groups I through IV are 25 (or 75/3), 20, 20, and 12.5, respectively. Using the weights, the probability of observing each flow is calculated as the weight divided by the total number within the population (e.g. group II is 20 (weight) divided by 200 (the total population of facilities), which equals 0.1). The following table depicts the ordered observations with the group (group), design weight (weight), probability (prob), and cumulative probabilities (cum) associated with each value.

Obs	1	2	3	4	5	6	7	8	9	10
Flow (gal/tank)	100	200	500	1200	1400	1600	3200	3500	4000	5300
Group	II	I	I	II	III	II	I	IV	III	IV
Weight	20	25	25	20	20	20	25	12.5	20	12.5
Prob	0.1	0.125	0.125	0.1	0.1	0.1	0.125	.0625	0.1	.0625
Cum	0.1	0.225	0.35	0.45	0.55	0.65	0.775	.8375	.9375	1.0

Notice that the 50th percentile (P_{50}), is now a value between 1200 and 1400. Therefore, in order to determine the flow value at the 50th percentile, it is necessary to interpolate based on the probability of observing each value. Using this example, define the lower value as 1200 ($Value_{Low}$) and the upper value as 1400 ($Value_{High}$) such that the percentile of interest is captured by the cumulative probabilities of each value. Also, define P_{Low} as the cumulative probability associated with observing the lower value, P_{High} as the probability associated with observing the higher value, and X as the percentile of interest. Then the percentile is calculated as follows:

$$P_X = Value_{Low} + (Value_{High} - Value_{Low}) * [(X - P_{Low})/(P_{High} - P_{Low})]$$

Using the median or 50th percentile as an example, the following would result.

$$P_{50} = 1200 + (1400 - 1200) * \left[\frac{(.50 - .45)}{(.55 - .45)}\right] = 1200 + 200 * \frac{.05}{.1} = 1200 + 100 = 1300$$

Similarly, for the 90th percentile, the following would result.

$$P_{90} = 3500 + (4000 - 3500) * \left[\frac{(.90 - .8375)}{(.9375 - .8375)}\right] = 3500 + 500 * \frac{.0625}{.1} = 3500 + 312.5 = 3812.5$$

As demonstrated, in order to calculate percentiles for a sample based on a weighted design, it is essential to consider that each value has a design-based probability of occurring. Point estimates of the median (50th), 75th, 90th, 95th, and 99th percentiles of the flow per tank type cleaned were calculated by subcategory and type of tank cleaned using the methods described above. Section 6.2.2 provides the mathematical formulas used to calculate these percentile estimates.

6.2.2 Percentile Estimates

Computationally, the flow values reported by each facility (y_{hij}) are arranged in ascending order across all values of the indices. The survey weights associated with the arranged y_{hij} are summed until the first instance when the value of p is exceeded. The mathematical formulation is presented below.

Denote the pth percentile of the distribution F as θ_p. Define θ_p as

$$\theta_p = \inf\{F(Y) < p\}.$$

The cumulative distribution, F(Y), is estimated as

$$F(\hat{Y}) = \sum_{h=1}^{12} \sum_{j=1}^{5} w_{hj}{}^{*} a_{hij}$$

with

$$w_{hj}{}^{*} = \frac{w_{hj}}{\sum_{h=1}^{12} \sum_{j=1}^{5} w_{hj}} = \frac{w_{hj}}{\hat{X}}$$

where w_{hj} = survey weight for subcategory h, tank type j
y_{hij} = flow from i^{th} facility in subcategory h, tank type j
a_{hij} = 1 if $y_{hij} \leq y$; 0 otherwise.

Thus, the pth percentile is estimated as

$$\hat{F}^{-1}(p), \; 0 < p < 1.$$

Appendix F presents the 75th, 90th, 95th, and 99th percentile estimates for flow per tank type cleaned.

6.3 Unit Conversion Factor

In order to convert mass based limitations to grams/tank, a conversion factor was applied. If the concentration based limitations were presented in mg/l, the conversion factor, k, was

$$k = \left(\frac{1{,}000l}{264.17gal}\right)\left(\frac{g}{1{,}000mg}\right) = .0037854.$$

For concentration based limitations reported in ug/l, the conversion factor, k, was

$$k = \left(\frac{1{,}000l}{264.17gal}\right)\left(\frac{g}{10^{6}ug/l}\right) = .0000038.$$

6.4 Mass Based Limitations

6.4.1 Daily Mass Based Limitations

For each subcategory, pollutant-specific daily maximum mass based limitations were calculated as the product of the daily maximum concentration based limitation, the estimated median flow per tank cleaned, and the units conversion factor (k). For example, the mass based daily maximum limitation for Pyrene in Rail/Chemical Direct NSPS (Option III) was calculated as follows: As indicated in Table 6-1, the estimated median flow per tank cleaned for Rail/Chemical Direct is 2,091 gallons per tank. The daily maximum limitation for Pyrene (see Appendix E.2) is 85.5 ug/l. Thus, the mass based daily maximum concentration is 85.5 ug/l * 2,091 gallons/tank * .0000038 = 0.68 grams/tank. **Appendices G.1 - G.9** present the proposed daily maximum limitations, concentration based limitations, flow per tank type cleaned, and conversion units for the regulated pollutants by subcategory and the selected technology option.

6.4.2 4-day Mass Based Limitations

For the Conventional pollutants, monthly, or 4-day, mass based limitations were calculated as the product of the 4-day maximum concentration based limitation, the estimated median flow per tank type cleaned and the units conversion factor, k. For the remaining pollutants, the monthly mass based limitations were assumed to be the same as the daily mass based limitations, since EPA assumed it was reasonable to sample once per month for these pollutants rather than four times per month. Appendices G.1 - G.9 present the proposed monthly maximum limitations, concentration based limitations, flow per tank type cleaned, and conversion units for the regulated pollutants by subcategory and the selected technology option.

6.4.3 Transfer of Mass Based Limitations

For two pollutants, it was necessary to transfer mass based limitations. The mass based daily limitation for Chemical Oxygen Demand (COD) in the Barge/Chemical Indirect subcategory PSNS (Option II) was transferred from Barge/Chemical Direct BAT and NSPS (Option I). The daily limitation for COD was also transferred from Truck/Chemical Direct to Truck/Chemical Indirect and Rail/Chemical Direct to Rail/Chemical Indirect. In Rail/Chemical Direct BPT and BCT (Option I), the daily and monthly maximum limitations for Total Suspended Solids (TSS) were transferred from Rail/Chemical Direct NSPS (Option III). **Tables 6-2 through 6-10** present the mass based limitations for each subcategory.

Table 6-2.
Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Proposed Mass Based Limitations

Grams/Tank							
Pollutant	BPT		BCT		BAT	NSPS	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Daily Maximum	Monthly Average
BOD_5	145.00	67.60	145.00	67.60	N/A	145.00	67.60
TSS	281.00	115.00	281.00	115.00	N/A	281.00	115.00
HEM	25.30	16.10	25.30	16.10	N/A	25.30	16.10
Chromium	0.16	0.16	N/A	N/A	0.16	0.16	0.16
Zinc	0.09	0.09	N/A	N/A	0.09	0.09	0.09
COD	3,760.00	3,760.00	N/A	N/A	3,760.00	3,760.00	3,760.00
Bis (2-ethylhexyl) pthalate	0.12	0.12	N/A	N/A	0.12	0.12	0.12
di-N-octyl phthalate	0.12	0.12	N/A	N/A	0.12	0.12	0.12
N-Dodecane	0.12	0.12	N/A	N/A	0.12	0.12	0.12
N-Hexadecane	0.12	0.12	N/A	N/A	0.12	0.12	0.12
Styrene	0.20	0.20	N/A	N/A	0.20	0.20	0.20
1,2-dichlorobenzene	0.12	0.12	N/A	N/A	0.12	0.12	0.12

Table 6-3.
Truck/Chemical Indirect Subcategory: PSES and PSNS
Proposed Mass Based Limitations

Pollutant	Grams/Tank			
	PSES		PSNS	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average
Chromium	0.20	0.20	0.20	0.20
Zinc	0.12	0.12	0.12	0.12
COD	3,760.00	3,760.00	3,760.00	3,760.00
Bis (2-ethylhexyl) pthalate	0.23	0.23	0.23	0.23
di-N-octyl phthalate	0.15	0.15	0.15	0.15
N-Dodecane	0.19	0.19	0.19	0.19
N-Hexadecane	0.19	0.19	0.19	0.19
Styrene	0.40	0.40	0.40	0.40
1,2-dichlorobenzene	0.15	0.15	0.15	0.15

Table 6-4.
Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Proposed Mass Based Limitations

Grams/Tank							
Pollutant	BPT		BCT		BAT	NSPS	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Daily Maximum	Monthly Average
BOD_5	3,840.00	1,790.00	3,840.00	1,790.00	N/A	3,840.00	1,790.00
TSS	338.00	141.00	338.00	141.00	N/A	338.00	141.00
HEM	470.00	286.00	470.00	286.00	N/A	130.00	83.00
COD	42,000.00	42,000.00	N/A	N/A	42,200.00	42,200.00	42,200.00
N-Dodecane	0.43	0.43	N/A	N/A	0.63	0.43	0.43
N-Hexadecane	0.43	0.43	N/A	N/A	0.43	0.43	0.43
N-Tetradecane	0.43	0.43	N/A	N/A	0.43	0.43	0.43
Anthracene	2.20	2.20	N/A	N/A	2.20	2.20	2.20
Pyrene	0.68	0.68	N/A	N/A	0.68	0.68	0.68
Fluoranthene	0.74	0.74	N/A	N/A	0.74	0.74	0.74
Phenanthrene	1.96	1.96	N/A	N/A	1.96	1.96	1.96

Table 6-5.
Rail/Chemical Indirect Subcategory: PSES and PSNS
Proposed Mass Based Limitations

Grams/Tank				
Pollutant	PSES		PSNS	
	Daily	Monthly	Daily	Monthly
SGT-HEM	942.00	942.00	207.00	207.00
COD	42,000.00	42,000.00	42,000.00	42,000.00
N-Hexadecane	2.56	2.56	2.56	2.56
N-Dodecane	6.57	6.57	0.66	0.66
N-Tetradecane	3.98	3.98	0.66	0.66
Fluoranthene	0.60	0.60	0.60	0.60

Table 6-6.
Barge/Chemical & Petroleum Direct Subcategory: BPT, BCT, BAT, and NSPS
Proposed Mass Based Limitations

Pollutant	Grams/Tank						
	BPT		BCT		BAT	NSPS	
	Daily	Monthly	Daily	Monthly	Daily	Daily	Monthly
BOD_5	18,300.00	8,600.00	18,300.00	8,600.00	N/A	18,300.00	8,600.00
TSS	9,540.00	6,090.00	9,540.00	6,090.00	N/A	9,540.00	6,090.00
HEM	658.00	294.00	658.00	294.00	N/A	658.00	294.00
COD	74,300.00	74,300.00	N/A	N/A	74,300.00	74,300.00	74,300.00
Cadmium	0.19	0.19	N/A	N/A	0.19	0.19	0.19
Chromium	1.82	1.82	N/A	N/A	1.82	1.82	1.82
Copper	2.17	2.17	N/A	N/A	2.17	2.17	2.17
Lead	1.93	1.93	N/A	N/A	1.93	1.93	1.93
Nickel	15.30	15.30	N/A	N/A	15.30	15.30	15.30
Zinc	153.00	153.00	N/A	N/A	153.00	153.00	153.00
1-	2.04	2.04	N/A	N/A	2.04	2.04	2.04
Bis (2-ethylhexyl)	1.88	1.88	N/A	N/A	1.88	1.88	1.88
Di-N-Octyl Phthalate	2.68	2.68	N/A	N/A	2.68	2.68	2.68
N-Decane	5.96	5.96	N/A	N/A	5.96	5.96	5.96
N-Docesane	3.02	3.02	N/A	N/A	3.02	3.02	3.02
N-Dodecane	16.70	16.70	N/A	N/A	16.70	16.70	16.70
N-Eicosane	6.67	6.67	N/A	N/A	6.67	6.67	6.67
N-Octadecane	7.45	7.45	N/A	N/A	7.45	7.45	7.45
N-Tetracosane	2.19	2.19	N/A	N/A	2.19	2.19	2.19
N-Tetradecane	7.30	7.30	N/A	N/A	7.30	7.30	7.30
P-Cymene	0.29	0.29	N/A	N/A	0.29	0.29	0.29
Pyrene	1.20	1.20	N/A	N/A	1.20	1.20	1.20

Table 6-7.
Barge/Chemical & Petroleum Indirect Subcategory: PSES and PSNS
Proposed Mass Based Limitations

Grams/Tank				
Pollutant	PSES		PSNS	
	Daily	Monthly	Daily	Monthly
SGT-HEM	N/A	N/A	347.00	347.00
COD	N/A	N/A	74,300.00	74,300.00
Cadmium	N/A	N/A	0.51	0.51
Chromium	N/A	N/A	0.61	0.61
Copper	N/A	N/A	79.90	79.90
Lead	N/A	N/A	5.04	5.04
Nickel	N/A	N/A	39.10	39.10
Zinc	N/A	N/A	241.00	241.00
1-Methylphenanthrene	N/A	N/A	9.70	9.70
Bis (2-ethylhexyl) Phthalate	N/A	N/A	2.05	2.05
Di-N-Octyl Phthalate	N/A	N/A	7.69	7.69
N-Decane	N/A	N/A	7.26	7.26
N-Docesane	N/A	N/A	3.67	3.67
N-Dodecane	N/A	N/A	20.30	20.30
N-Eicosane	N/A	N/A	8.13	8.13
N-Octadecane	N/A	N/A	9.07	9.07
N-Tetracosane	N/A	N/A	5.51	5.51
N-Tetradecane	N/A	N/A	8.90	8.90
P-Cymene	N/A	N/A	2.21	2.21
Pyrene	N/A	N/A	2.94	2.94

Table 6-8.
Truck/Food Subcategory: BPT, BCT, and NSPS
Proposed Mass Based Limitations

Pollutant	Grams/Tank						
	BPT		BCT		BAT	NSPS	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Daily Maximum	Monthly Average
BOD_5	166.00	72.40	166.00	72.40	N/A	166.00	72.40
TSS	673.00	256.00	673.00	256.00	N/A	673.00	256.00
HEM	60.40	26.30	60.40	26.30	N/A	60.40	26.30

Table 6-9.
Rail/Food Subcategory: BPT, BCT, and NSPS
Proposed Mass Based Limitations

Pollutant	Grams/Tank						
	BPT		BCT		BAT	NSPS	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Daily Maximum	Monthly Average
BOD_5	945.00	412.00	945.00	412.00	N/A	945.00	412.00
TSS	3,830.00	1,460.00	3,830.00	1,460.00	N/A	3,830.00	1,460.00
HEM	344.00	150.00	344.00	150.00	N/A	344.00	150.00

Table 6-10.
Barge/Food Subcategory: BPT, BCT, and NSPS
Proposed Mass Based Limitations

Pollutant	Grams/Tank						
	BPT		BCT		BAT	NSPS	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Daily Maximum	Monthly Average
BOD_5	945.00	412.00	945.00	412.00	N/A	945.00	412.00
TSS	3,830.00	1,460.00	3,830.00	1,460.00	N/A	3,830.00	1,460.00
HEM	344.00	150.00	344.00	150.00	N/A	344.00	150.00

Appendices A.1 - A.7

APPENDIX A.1
Listing of Daily Data for Rail/Chemical Indirect Subcategory: PSES and PSNS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
		SGT-HEM	C-037	FAC1	MG/L	1	3	04/27/95	NC	23.67
						1	3	05/17/95	NC	57.00
						1	3	05/25/95	NC	23.00
						1	3	06/08/95	NC	56.00
						3	4	04/27/95	ND	5.00
						3	4	05/17/95	NC	16.33
						3	4	05/25/95	NC	13.33
						3	4	06/08/95	NC	8.33
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	FAC1	UG/L	1	3	04/27/95	NC	188.63
						1	3	05/17/95	NC	92.46
						1	3	05/25/95	NC	24.45
						1	3	06/08/95	ND	10.00
						3	4	04/27/95	ND	10.00
						3	4	05/17/95	ND	10.00
						3	4	05/25/95	ND	10.00
						3	4	06/08/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	FAC1	UG/L	1	3	04/27/95	ND	10.00
						1	3	05/17/95	NC	82.57
						1	3	05/25/95	ND	10.00
						1	3	06/08/95	NC	19.65
						3	3	04/27/95	ND	10.00
						3	3	05/17/95	NC	82.57
						3	3	05/25/95	ND	10.00
						3	3	06/08/95	NC	19.65
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	FAC1	UG/L	1	3	04/27/95	NC	130.37
						1	3	05/17/95	NC	50.16
						1	3	05/25/95	NC	26.68
						1	3	06/08/95	ND	10.00
						3	4	04/27/95	ND	10.00
						3	4	05/17/95	ND	10.00
						3	4	05/25/95	ND	10.00
						3	4	06/08/95	ND	10.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

APPENDIX A.1
Listing of Daily Data for Rail/Chemical Indirect Subcategory: PSES and PSNS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	PAHS	FLUORANTHENE	206440	FAC1	UG/L	1	3	04/27/95	NC	31.45
						1	3	05/17/95	NC	12.50
						1	3	05/25/95	ND	10.00
						1	3	06/08/95	ND	10.00
						3	3	04/27/95	NC	31.45
						3	3	05/17/95	NC	12.50
						3	3	05/25/95	ND	10.00
						3	3	06/08/95	ND	10.00
METAL	METALS	ALUMINUM	7429905	FAC1	UG/L	2	3	04/27/95	NC	16400.00
						2	3	05/17/95	NC	11200.00
						2	3	05/25/95	NC	2970.00
						2	3	06/08/95	NC	4960.00
METAL	METALS	BARIUM	7440393	FAC1	UG/L	2	4	04/27/95	ND	200.00
						2	4	05/17/95	ND	200.00
						2	4	05/25/95	ND	200.00
						2	4	06/08/95	ND	200.00
METAL	METALS	CHROMIUM	7440473	FAC1	UG/L	2	4	04/27/95	ND	10.00
						2	4	05/17/95	ND	10.00
						2	4	05/25/95	ND	10.00
						2	4	06/08/95	ND	10.00
METAL	METALS	COPPER	7440508	FAC1	UG/L	2	4	04/27/95	ND	25.00
						2	4	05/17/95	ND	25.00
						2	4	05/25/95	ND	25.00
						2	4	06/08/95	ND	25.00
METAL	METALS	TITANIUM	7440326	FAC1	UG/L	2	4	04/27/95	ND	5.00
						2	4	05/17/95	ND	5.00
						2	4	05/25/95	ND	5.00
						2	4	06/08/95	ND	5.00
METAL	METALS	ZINC	7440666	FAC1	UG/L	2	4	04/27/95	ND	20.00
						2	4	05/17/95	ND	20.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

APPENDIX A.1
Listing of Daily Data for Rail/Chemical Indirect Subcategory: PSES and PSNS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
METAL	METALS	ZINC	7440666	FAC1	UG/L	2	4	05/25/95	ND	20.00
						2	4	06/08/95	NC	25.40

FAC1 contains episodes 4717, 4718, 4719, and 4730.

APPENDIX A.2
Listing of Daily Data for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
	NONE	BOD 5-DAY (CARBONACEOUS)	C-002	FAC1	MG/L	1	2	04/27/95	NC	95.50
						1	2	05/17/95	NC	195.50
						1	2	05/25/95	NC	125.50
						2	2	04/27/95	NC	95.50
						2	2	05/17/95	NC	195.50
						2	2	05/25/95	NC	125.50
						3	2	04/27/95	NC	95.50
						3	2	05/17/95	NC	195.50
						3	2	05/25/95	NC	125.50
	NONE	CHEMICAL OXYGEN DEMAND (COD)	C-004	FAC1	MG/L	1	2	04/27/95	NC	379.20
						1	2	05/17/95	NC	354.00
						1	2	05/25/95	NC	314.40
						1	2	06/08/95	NC	2388.00
						2	2	04/27/95	NC	379.20
						2	2	05/17/95	NC	354.00
						2	2	05/25/95	NC	314.40
						2	2	06/08/95	NC	2388.00
						3	2	04/27/95	NC	379.20
						3	2	05/17/95	NC	354.00
						3	2	05/25/95	NC	314.40
						3	2	06/08/95	NC	2388.00
	NONE	HEXANE EXTRACTABLE MATERIAL	C-036	FAC1	MG/L	1	3	04/27/95	NC	15.77
						1	3	05/17/95	NC	38.52
						1	3	05/25/95	NC	23.94
						1	3	06/08/95	NC	27.48
						2	4	04/27/95	ND	5.00
						2	4	05/17/95	NC	11.99
						2	4	05/25/95	NC	7.07
						2	4	06/08/95	NC	7.32
						3	4	04/27/95	ND	5.00
						3	4	05/17/95	NC	11.99
						3	4	05/25/95	NC	7.07
						3	4	06/08/95	NC	7.32

FAC1 contains episodes 4717, 4718, 4719, and 4730.

APPENDIX A.2
Listing of Daily Data for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
	NONE	TOTAL SUSPENDED SOLIDS	C-009	FAC1	MG/L	2	4	04/27/95	NC	23.00
						2	4	05/17/95	NC	28.00
						2	4	05/25/95	NC	34.00
						2	4	06/08/95	NC	132.00
						3	6,7	04/27/95	NC	4.50
						3	6,7	05/17/95	NC	9.50
						3	6,7	05/25/95	NC	18.00
						3	6,7	06/08/95	ND	4.00
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	FAC1	UG/L	1	3	04/27/95	NC	24.52
						1	3	05/17/95	NC	12.02
						1	3	05/25/95	ND	10.00
						1	3	06/08/95	ND	10.00
						2	4	04/27/95	ND	10.00
						2	4	04/27/95	ND	10.00
						2	4	05/17/95	ND	10.00
						2	4	05/17/95	ND	10.00
						2	4	05/25/95	ND	10.00
						2	4	05/25/95	ND	10.00
						2	4	06/08/95	ND	10.00
						2	4	06/08/95	ND	10.00
						3	4	04/27/95	ND	10.00
						3	4	05/17/95	ND	10.00
						3	4	05/25/95	ND	10.00
						3	4	06/08/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	FAC1	UG/L	1	3	04/27/95	ND	10.00
						1	3	05/17/95	ND	10.00
						1	3	05/25/95	ND	10.00
						1	3	06/08/95	ND	10.00
						2	3	04/27/95	ND	10.00
						2	3	04/27/95	ND	10.00
						2	3	05/17/95	ND	10.00
						2	3	05/17/95	ND	10.00
						2	3	05/25/95	ND	10.00
						2	3	05/25/95	ND	10.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

APPENDIX A.2
Listing of Daily Data for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	FAC1	UG/L	2	3	06/08/95	ND	10.00
						2	3	06/08/95	ND	10.00
						3	3	04/27/95	ND	10.00
						3	3	05/17/95	ND	10.00
						3	3	05/25/95	ND	10.00
						3	3	06/08/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	FAC1	UG/L	1	3	04/27/95	ND	10.00
						1	3	05/17/95	ND	10.00
						1	3	05/25/95	ND	10.00
						1	3	06/08/95	ND	10.00
						2	4	04/27/95	ND	10.00
						2	4	04/27/95	ND	10.00
						2	4	05/17/95	ND	10.00
						2	4	05/17/95	ND	10.00
						2	4	05/25/95	ND	10.00
						2	4	05/25/95	ND	10.00
						2	4	06/08/95	ND	10.00
						2	4	06/08/95	ND	10.00
						3	4	04/27/95	ND	10.00
						3	4	05/17/95	ND	10.00
						3	4	05/25/95	ND	10.00
						3	4	06/08/95	ND	10.00
BASE-NEUTRALS	PAHS	ANTHRACENE	120127	FAC1	UG/L	1	3	04/27/95	NC	84.81
						1	3	05/17/95	NC	61.84
						1	3	05/25/95	NC	15.06
						1	3	06/08/95	ND	10.00
						2	3	04/27/95	NC	84.81
						2	3	04/27/95	NC	84.81
						2	3	05/17/95	NC	61.84
						2	3	05/17/95	NC	61.84
						2	3	05/25/95	NC	15.06
						2	3	05/25/95	NC	15.06
						2	3	06/08/95	ND	10.00
						2	3	06/08/95	ND	10.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

APPENDIX A.2
Listing of Daily Data for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	PAHS	ANTHRACENE	120127	FAC1	UG/L	3	3	04/27/95	NC	84.81
						3	3	05/17/95	NC	61.84
						3	3	05/25/95	NC	15.06
						3	3	06/08/95	ND	10.00
BASE-NEUTRALS	PAHS	FLUORANTHENE	206440	FAC1	UG/L	1	3	04/27/95	NC	31.45
						1	3	05/17/95	NC	12.50
						1	3	05/25/95	ND	10.00
						1	3	06/08/95	ND	10.00
						2	3	04/27/95	NC	31.45
						2	3	04/27/95	NC	31.45
						2	3	05/17/95	NC	12.50
						2	3	05/17/95	NC	12.50
						2	3	05/25/95	ND	10.00
						2	3	05/25/95	ND	10.00
						2	3	06/08/95	ND	10.00
						2	3	06/08/95	ND	10.00
						3	3	04/27/95	NC	31.45
						3	3	05/17/95	NC	12.50
						3	3	05/25/95	ND	10.00
						3	3	06/08/95	ND	10.00
BASE-NEUTRALS	PAHS	PHENANTHRENE	85018	FAC1	UG/L	1	3	04/27/95	NC	79.50
						1	3	05/17/95	NC	44.95
						1	3	05/25/95	NC	10.43
						1	3	06/08/95	ND	10.00
						2	3	04/27/95	NC	79.50
						2	3	04/27/95	NC	79.50
						2	3	05/17/95	NC	44.95
						2	3	05/17/95	NC	44.95
						2	3	05/25/95	NC	10.43
						2	3	05/25/95	NC	10.43
						2	3	06/08/95	ND	10.00
						2	3	06/08/95	ND	10.00
						3	3	04/27/95	NC	79.50
						3	3	05/17/95	NC	44.95

FAC1 contains episodes 4717, 4718, 4719, and 4730.

APPENDIX A.2
Listing of Daily Data for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	PAHS	PHENANTHRENE	85018	FAC1	UG/L	3	3	05/25/95	NC	10.43
						3	3	06/08/95	ND	10.00
BASE-NEUTRALS	PAHS	PYRENE	129000	FAC1	UG/L	1	3	04/27/95	NC	27.58
						1	3	05/17/95	NC	12.61
						1	3	05/25/95	ND	10.00
						1	3	06/08/95	ND	10.00
						2	3	04/27/95	NC	27.58
						2	3	04/27/95	NC	27.58
						2	3	05/17/95	NC	12.61
						2	3	05/17/95	NC	12.61
						2	3	05/25/95	ND	10.00
						2	3	05/25/95	ND	10.00
						2	3	06/08/95	ND	10.00
						2	3	06/08/95	ND	10.00
						3	3	04/27/95	NC	27.58
						3	3	05/17/95	NC	12.61
						3	3	05/25/95	ND	10.00
						3	3	06/08/95	ND	10.00
METAL	METALS	ALUMINUM	7429905	FAC1	UG/L	2	3	04/27/95	NC	16400.00
						2	3	05/17/95	NC	11200.00
						2	3	05/25/95	NC	2970.00
						2	3	06/08/95	NC	4960.00
METAL	METALS	BARIUM	7440393	FAC1	UG/L	2	4	04/27/95	NC	100.00
						2	4	05/17/95	NC	130.00
						2	4	05/25/95	NC	70.70
						2	4	06/08/95	NC	155.00
METAL	METALS	CHROMIUM	7440473	FAC1	UG/L	2	4	04/27/95	ND	10.00
						2	4	05/17/95	ND	10.00
						2	4	05/25/95	ND	10.00
						2	4	06/08/95	ND	10.00
METAL	METALS	COPPER	7440508	FAC1	UG/L	2	4	04/27/95	ND	8.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

APPENDIX A.2
Listing of Daily Data for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
METAL	METALS	COPPER	7440508	FAC1	UG/L	2	4	05/17/95	ND	8.00
						2	4	05/25/95	ND	8.00
						2	4	06/08/95	ND	8.00
METAL	METALS	TITANIUM	7440326	FAC1	UG/L	2	4	04/27/95	ND	3.00
						2	4	05/17/95	ND	3.00
						2	4	05/25/95	ND	3.00
						2	4	06/08/95	ND	3.00
METAL	METALS	ZINC	7440666	FAC1	UG/L	2	4	04/27/95	NC	15.20
						2	4	05/17/95	ND	9.00
						2	4	05/25/95	ND	9.00
						2	4	06/08/95	NC	25.40

FAC1 contains episodes 4717, 4718, 4719, and 4730.

APPENDIX A.3
Listing of Daily Data for Barge/Chemical and Petroleum Indirect Subcategory: PSNS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
		HEXANE EXTRACTABLE MATERIAL	C-036	FAC2	MG/L	2	5	03/30/95	ND	5.00
						2	5	04/18/95	NC	5.07
						2	5	05/10/95	ND	5.00
						2	5	06/05/95	ND	5.00
		HEXANE EXTRACTABLE MATERIAL	C-036	FAC3	MG/L	2	5	03/28/95	NC	32.03
						2	5	04/20/95	NC	5.27
						2	5	05/08/95	ND	5.00
						2	5	05/30/95	NC	8.55
		SGT-HEM	C-037	FAC2	MG/L	4	4	03/30/95	NC	27.63
						4	4	04/18/95	NC	5.33
						4	4	05/10/95	NC	10.83
						4	4	06/05/95	NC	5.57
		SGT-HEM	C-037	FAC3	MG/L	2	3	03/28/95	ND	5.00
						2	3	04/20/95	ND	5.00
						2	3	05/08/95	ND	5.00
						2	3	05/30/95	ND	5.00
						4	4	03/28/95	ND	5.00
						4	4	04/20/95	NC	20.42
						4	4	05/08/95	NC	20.03
						4	4	05/30/95	NC	8.90
BASE-NEUTRALS	AROMATICS	P-CYMENE	99876	FAC3	UG/L	2	5	03/28/95	NC	13.02
						2	5	04/20/95	ND	10.00
						2	5	05/08/95	ND	10.00
						2	5	05/30/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-DECANE	124185	FAC2	UG/L	2	5	03/30/95	ND	10.00
						2	5	04/18/95	ND	10.00
						2	5	05/10/95	ND	10.00
						2	5	06/05/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-DOCOSANE	629970	FAC3	UG/L	2	5	03/28/95	NC	41.54

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.3
Listing of Daily Data for Barge/Chemical and Petroleum Indirect Subcategory: PSNS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	N-PARAFFINS	N-DOCOSANE	629970	FAC3	UG/L	2	5	04/20/95	ND	10.00
						2	5	05/08/95	ND	10.00
						2	5	05/30/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	FAC2	UG/L	2	5	03/30/95	ND	10.00
						2	5	04/18/95	ND	10.00
						2	5	05/10/95	ND	10.00
						2	5	06/05/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-EICOSANE	112958	FAC3	UG/L	2	5	03/28/95	NC	128.46
						2	5	04/20/95	ND	10.00
						2	5	05/08/95	ND	10.00
						2	5	05/30/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-OCTADECANE	593453	FAC3	UG/L	2	5	03/28/95	NC	146.80
						2	5	04/20/95	ND	10.00
						2	5	05/08/95	ND	10.00
						2	5	05/30/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-TETRACOSANE	646311	FAC3	UG/L	2	3	03/28/95	ND	10.00
						2	3	04/20/95	NC	77.31
						2	3	05/08/95	ND	10.00
						2	3	05/30/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	FAC2	UG/L	2	5	03/30/95	ND	10.00
						2	5	04/18/95	ND	10.00
						2	5	05/10/95	ND	10.00
						2	5	06/05/95	ND	10.00
BASE-NEUTRALS	PAHS	1-METHYLPHENANTHRENE	832699	FAC3	UG/L	2	3	03/28/95	NC	14.23
						2	3	04/20/95	NC	90.58
						2	3	05/08/95	ND	10.00
						2	3	05/30/95	ND	10.00
BASE-NEUTRALS	PAHS	PYRENE	129000	FAC3	UG/L	2	3	03/28/95	ND	10.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.3
Listing of Daily Data for Barge/Chemical and Petroleum Indirect Subcategory: PSNS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	PAHS	PYRENE	129000	FAC3	UG/L	2	3	04/20/95	NC	27.33
						2	3	05/08/95	ND	10.00
						2	3	05/30/95	ND	10.00
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	FAC2	UG/L	2	5	03/30/95	ND	10.00
						2	5	04/18/95	ND	10.00
						2	5	05/10/95	ND	10.00
						2	5	06/05/95	ND	10.00
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	FAC3	UG/L	2	3	03/28/95	ND	10.00
						2	3	04/20/95	NC	119.91
						2	3	05/08/95	ND	10.00
						2	3	05/30/95	ND	10.00
METAL	METALS	CADMIUM	7440439	FAC3	UG/L	2	3	03/28/95	NC	5.16
						2	3	04/20/95	NC	2.48
						2	3	05/08/95	ND	1.60
						2	3	05/30/95	ND	5.00
METAL	METALS	CHROMIUM	7440473	FAC3	UG/L	2	3	03/28/95	ND	2.60
						2	3	04/20/95	ND	2.60
						2	3	05/08/95	ND	2.60
						2	3	05/30/95	ND	10.00
METAL	METALS	COPPER	7440508	FAC3	UG/L	2	3	03/28/95	NC	895.36
						2	3	04/20/95	NC	15.84
						2	3	05/08/95	ND	1.10
						2	3	05/30/95	NC	55.50
METAL	METALS	LEAD	7439921	FAC3	UG/L	2	3	03/28/95	ND	33.40
						2	3	04/20/95	ND	33.40
						2	3	05/08/95	ND	33.40
						2	3	05/30/95	ND	47.00
METAL	METALS	NICKEL	7440020	FAC3	UG/L	2	3	03/28/95	NC	711.10

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.3
Listing of Daily Data for Barge/Chemical and Petroleum Indirect Subcategory: PSNS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
METAL	METALS	NICKEL	7440020	FAC3	UG/L	2	3	04/20/95	NC	122.07
						2	3	05/08/95	NC	130.98
						2	3	05/30/95	NC	138.00
METAL	METALS	ZINC	7440666	FAC3	UG/L	2	3	03/28/95	NC	3206.70
						2	3	04/20/95	NC	362.26
						2	3	05/08/95	NC	1219.00
						2	3	05/30/95	NC	126.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.4
Listing of Daily Data for Barge/Chemical and Petroleum Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
		BOD 5-DAY (CARBONACEOUS)	C-002	FAC2	MG/L	1	5	03/30/95	NC	149.50
						1	5	04/18/95	NC	179.00
						1	5	05/10/95	NC	85.00
						1	5	06/05/95	NC	53.00
		BOD 5-DAY (CARBONACEOUS)	C-002	FAC3	MG/L	1	5	03/28/95	NC	866.00
						1	5	04/20/95	NC	172.00
						1	5	05/08/95	NC	279.00
						1	5	05/30/95	NC	392.00
		CHEMICAL OXYGEN DEMAND (COD)	C-004	FAC2	MG/L	1	5	03/30/95	NC	312.50
						1	5	04/18/95	NC	340.00
						1	5	05/10/95	NC	165.00
						1	5	06/05/95	NC	112.50
		CHEMICAL OXYGEN DEMAND (COD)	C-004	FAC3	MG/L	1	5	03/28/95	NC	1980.00
						1	5	04/20/95	NC	319.00
						1	5	05/08/95	NC	134.00
						1	5	05/30/95	NC	1200.00
		HEXANE EXTRACTABLE MATERIAL	C-036	FAC2	MG/L	1	5	03/30/95	NC	5.29
						1	5	04/18/95	NC	5.07
						1	5	05/10/95	ND	5.00
						1	5	06/05/95	ND	5.00
		HEXANE EXTRACTABLE MATERIAL	C-036	FAC3	MG/L	1	5	03/28/95	NC	32.03
						1	5	04/20/95	NC	5.27
						1	5	05/08/95	ND	5.00
						1	5	05/30/95	NC	9.90
		SGT-HEM	C-037	FAC2	MG/L	3	4	03/30/95	NC	27.63
						3	4	04/18/95	NC	5.33
						3	4	05/10/95	NC	10.83
						3	4	06/05/95	NC	5.57

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.4
Listing of Daily Data for Barge/Chemical and Petroleum Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
		SGT-HEM	C-037	FAC3	MG/L	1	5	03/28/95	NC	13.63
						1	5	04/20/95	ND	5.00
						1	5	05/08/95	ND	5.00
						1	5	05/30/95	ND	5.00
						3	4	03/28/95	ND	5.00
						3	4	04/20/95	NC	20.42
						3	4	05/08/95	NC	20.03
						3	4	05/30/95	NC	8.90
		TOTAL ORGANIC CARBON (TOC)	C-012	FAC2	MG/L	1	5	03/30/95	NC	85.70
						1	5	04/18/95	NC	123.00
						1	5	05/10/95	NC	48.20
						1	5	06/05/95	NC	52.80
		TOTAL ORGANIC CARBON (TOC)	C-012	FAC3	MG/L	1	5	03/28/95	NC	3550.00
						1	5	04/20/95	NC	159.00
						1	5	05/08/95	NC	138.00
						1	5	05/30/95	NC	162.00
		TOTAL SUSPENDED SOLIDS	C-009	FAC3	MG/L	1	5	03/28/95	NC	364.00
						1	5	04/20/95	NC	203.00
						1	5	05/08/95	NC	268.00
						1	5	05/30/95	NC	172.00
BASE-NEUTRALS	AROMATICS	P-CYMENE	99876	FAC2	UG/L	3	4	03/30/95	ND	10.00
						3	4	04/18/95	NC	12.33
						3	4	05/10/95	ND	20.00
						3	4	06/05/95	NC	11.59
BASE-NEUTRALS	AROMATICS	P-CYMENE	99876	FAC3	UG/L	1	5	03/28/95	NC	13.02
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	196.94

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.4
Listing of Daily Data for Barge/Chemical and Petroleum Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	AROMATICS	P-CYMENE	99876	FAC3	UG/L	3	4	05/08/95	ND	10.00
						3	4	05/30/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-DECANE	124185	FAC2	UG/L	1	5	03/30/95	ND	10.00
						1	5	04/18/95	ND	10.00
						1	5	05/10/95	ND	10.00
						1	5	06/05/95	ND	10.00
						3	4	03/30/95	NC	39.09
						3	4	04/18/95	ND	10.00
						3	4	05/10/95	NC	472.65
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-DECANE	124185	FAC3	UG/L	1	5	03/28/95	NC	212.86
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	NC	34.73
						3	4	04/20/95	NC	1817.60
						3	4	05/08/95	NC	681.95
						3	4	05/30/95	NC	598.37
BASE-NEUTRALS	N-PARAFFINS	N-DOCOSANE	629970	FAC2	UG/L	3	4	03/30/95	NC	12.50
						3	4	04/18/95	ND	10.00
						3	4	05/10/95	NC	107.00
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-DOCOSANE	629970	FAC3	UG/L	1	5	03/28/95	NC	41.54
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	185.95
						3	4	05/08/95	NC	29.50
						3	4	05/30/95	NC	20.84

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.4
Listing of Daily Data for Barge/Chemical and Petroleum Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	FAC2	UG/L	1	5	03/30/95	ND	10.00
						1	5	04/18/95	ND	10.00
						1	5	05/10/95	ND	10.00
						1	5	06/05/95	ND	10.00
						3	4	03/30/95	NC	35.62
						3	4	04/18/95	NC	64.79
						3	4	05/10/95	NC	626.59
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	FAC3	UG/L	1	5	03/28/95	NC	721.30
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	2096.10
						3	4	05/08/95	NC	1436.40
						3	4	05/30/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-EICOSANE	112958	FAC2	UG/L	3	4	03/30/95	NC	21.61
						3	4	04/18/95	NC	10.29
						3	4	05/10/95	NC	108.15
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-EICOSANE	112958	FAC3	UG/L	1	5	03/28/95	NC	128.46
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	552.64
						3	4	05/08/95	NC	76.07
						3	4	05/30/95	NC	80.96
BASE-NEUTRALS	N-PARAFFINS	N-OCTADECANE	593453	FAC2	UG/L	3	4	03/30/95	NC	24.22
						3	4	04/18/95	NC	14.90
						3	4	05/10/95	ND	20.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.4
Listing of Daily Data for Barge/Chemical and Petroleum Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	N-PARAFFINS	N-OCTADECANE	593453	FAC2	UG/L	3	4	06/05/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-OCTADECANE	593453	FAC3	UG/L	1	5	03/28/95	NC	146.80
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	NC	15.16
						3	4	04/20/95	NC	887.00
						3	4	05/08/95	NC	100.45
						3	4	05/30/95	NC	43.80
BASE-NEUTRALS	N-PARAFFINS	N-TETRACOSANE	646311	FAC2	UG/L	3	4	03/30/95	NC	17.90
						3	4	04/18/95	ND	10.00
						3	4	05/10/95	NC	101.29
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-TETRACOSANE	646311	FAC3	UG/L	1	5	03/28/95	NC	21.99
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	129.15
						3	4	05/08/95	NC	17.89
						3	4	05/30/95	NC	22.41
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	FAC2	UG/L	1	5	03/30/95	ND	10.00
						1	5	04/18/95	ND	10.00
						1	5	05/10/95	ND	10.00
						1	5	06/05/95	ND	10.00
						3	4	03/30/95	NC	43.39
						3	4	04/18/95	NC	56.03
						3	4	05/10/95	NC	818.67
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	FAC3	UG/L	1	5	03/28/95	NC	276.76

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.4
Listing of Daily Data for Barge/Chemical and Petroleum Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	FAC3	UG/L	1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	6033.50
						3	4	05/08/95	NC	945.75
						3	4	05/30/95	NC	168.48
BASE-NEUTRALS	PAHS	1-METHYLPHENANTHRENE	832699	FAC2	UG/L	3	4	03/30/95	ND	10.00
						3	4	04/18/95	ND	10.00
						3	4	05/10/95	ND	20.00
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	PAHS	1-METHYLPHENANTHRENE	832699	FAC3	UG/L	1	5	03/28/95	NC	38.22
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	92.77
						3	4	05/08/95	NC	23.18
						3	4	05/30/95	NC	15.24
BASE-NEUTRALS	PAHS	PYRENE	129000	FAC2	UG/L	3	4	03/30/95	ND	10.00
						3	4	04/18/95	ND	10.00
						3	4	05/10/95	ND	20.00
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	PAHS	PYRENE	129000	FAC3	UG/L	1	5	03/28/95	ND	10.00
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	38.72
						3	4	05/08/95	ND	10.00
						3	4	05/30/95	ND	10.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.4
Listing of Daily Data for Barge/Chemical and Petroleum Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	FAC2	UG/L	1	5	03/30/95	ND	10.00
						1	5	04/18/95	ND	10.00
						1	5	05/10/95	ND	10.00
						1	5	06/05/95	ND	10.00
						3	4	03/30/95	ND	10.00
						3	4	04/18/95	ND	10.00
						3	4	05/10/95	NC	178.41
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	FAC3	UG/L	1	5	03/28/95	ND	10.00
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	91.16
						3	4	05/08/95	NC	22.70
						3	4	05/30/95	NC	12.72
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	FAC2	UG/L	3	4	03/30/95	ND	10.00
						3	4	04/18/95	ND	10.00
						3	4	05/10/95	ND	20.00
						3	4	06/05/95	ND	10.00
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	FAC3	UG/L	1	5	03/28/95	NC	27.25
						1	5	04/20/95	ND	10.00
						1	5	05/08/95	ND	10.00
						1	5	05/30/95	ND	10.00
						3	4	03/28/95	ND	10.00
						3	4	04/20/95	NC	147.22
						3	4	05/08/95	NC	17.51
						3	4	05/30/95	ND	10.00
METAL	METALS	CADMIUM	7440439	FAC3	UG/L	1	5	03/28/95	NC	4.90
						1	5	04/20/95	ND	1.60
						1	5	05/08/95	NC	1.60

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.4
Listing of Daily Data for Barge/Chemical and Petroleum Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
METAL	METALS	CADMIUM	7440439	FAC3	UG/L	1	5	05/30/95	ND	5.00
METAL	METALS	CHROMIUM	7440473	FAC3	UG/L	1	5	03/28/95	NC	71.36
						1	5	04/20/95	ND	2.60
						1	5	05/08/95	ND	2.60
						1	5	05/30/95	NC	11.00
METAL	METALS	COPPER	7440508	FAC3	UG/L	1	5	03/28/95	NC	50.00
						1	5	04/20/95	NC	20.66
						1	5	05/08/95	NC	41.76
						1	5	05/30/95	NC	49.00
METAL	METALS	LEAD	7439921	FAC3	UG/L	1	5	03/28/95	NC	33.93
						1	5	04/20/95	ND	33.40
						1	5	05/08/95	ND	33.40
						1	5	05/30/95	ND	47.00
METAL	METALS	NICKEL	7440020	FAC3	UG/L	1	5	03/28/95	NC	342.74
						1	5	04/20/95	NC	215.50
						1	5	05/08/95	NC	387.57
						1	5	05/30/95	NC	212.00
METAL	METALS	ZINC	7440666	FAC3	UG/L	1	5	03/28/95	NC	2658.00
						1	5	04/20/95	NC	2068.00
						1	5	05/08/95	NC	5139.70
						1	5	05/30/95	NC	1590.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

APPENDIX A.5
Listing of Daily Data for Truck/Chemical Indirect Subcategory: PSES and PSNS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
		CHEMICAL OXYGEN DEMAND (COD)	C-004	4677	MG/L	2	4,5	02/21/95	NC	871.00
						2	4,5	02/22/95	NC	1270.00
						2	4,5	02/23/95	NC	728.00
BASE-NEUTRALS	AROMATICS	STYRENE	100425	4676	UG/L	2	6,7	01/24/95	NC	28.07
						2	6,7	01/25/95	NC	61.09
						2	6,7	01/26/95	NC	45.84
BASE-NEUTRALS	AROMATICS	STYRENE	100425	4677	UG/L	2	4,5	02/21/95	ND	10.00
						2	4,5	02/22/95	ND	10.00
						2	4,5	02/23/95	ND	10.00
BASE-NEUTRALS	CHLOROBENZENES II	1,2-DICHLOROBENZENE	95501	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	ND	10.00
						2	3	02/23/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	ND	10.00
						2	3	02/23/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	4676	UG/L	2	5	01/24/95	ND	10.00
						2	5	01/25/95	ND	10.00
						2	5	01/26/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	ND	10.00
						2	3	02/23/95	ND	10.00
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	4676	UG/L	2	5	01/24/95	NC	41.63
						2	5	01/25/95	ND	10.00
						2	5	01/26/95	NC	10.71
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	ND	10.00
						2	3	02/23/95	ND	10.00

APPENDIX A.5
Listing of Daily Data for Truck/Chemical Indirect Subcategory: PSES and PSNS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	4676	UG/L	2	5	01/24/95	ND	10.00
						2	5	01/25/95	ND	10.00
						2	5	01/26/95	ND	10.00
METAL	METALS	CHROMIUM	7440473	4677	UG/L	2	3	02/21/95	NC	11.90
						2	3	02/22/95	NC	30.30
						2	3	02/23/95	NC	16.20
METAL	METALS	ZINC	7440666	4677	UG/L	2	3	02/21/95	ND	6.00
						2	3	02/22/95	NC	15.20
						2	3	02/23/95	NC	13.00

APPENDIX A.6
Listing of Daily Data for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
		BOD 5-DAY (CARBONACEOUS)	C-002	4676	MG/L	2	2	01/24/95	NC	21.00
						2	2	01/25/95	NC	17.20
						2	2	01/26/95	NC	16.10
		CHEMICAL OXYGEN DEMAND (COD)	C-004	4676	MG/L	2	5	01/24/95	NC	158.40
						2	5	01/25/95	NC	92.52
						2	5	01/26/95	NC	45.00
		CHEMICAL OXYGEN DEMAND (COD)	C-004	4677	MG/L	2	3	02/21/95	NC	458.40
						2	3	02/22/95	NC	445.20
						2	3	02/23/95	NC	464.40
		HEXANE EXTRACTABLE MATERIAL	C-036	4676	MG/L	2	5	01/24/95	NC	5.69
						2	5	01/25/95	ND	5.00
						2	5	01/26/95	ND	5.00
		HEXANE EXTRACTABLE MATERIAL	C-036	4677	MG/L	2	3	02/21/95	NC	5.42
						2	3	02/22/95	NC	5.33
						2	3	02/23/95	NC	5.56
		TOTAL ORGANIC CARBON (TOC)	C-012	4676	MG/L	2	2	01/24/95	NC	56.24
						2	2	01/25/95	NC	53.65
						2	2	01/26/95	NC	30.34
		TOTAL ORGANIC CARBON (TOC)	C-012	4677	MG/L	2	2	02/21/95	NC	434.75
						2	2	02/22/95	NC	397.75
						2	2	02/23/95	NC	410.70
		TOTAL SUSPENDED SOLIDS	C-009	4676	MG/L	2	6,7	01/24/95	NC	32.00
						2	6,7	01/25/95	NC	37.00
						2	6,7	01/26/95	NC	32.00
		TOTAL SUSPENDED SOLIDS	C-009	4677	MG/L	2	4,5	02/21/95	NC	8.00
						2	4,5	02/22/95	NC	42.50
						2	4,5	02/23/95	NC	8.00

APPENDIX A.6
Listing of Daily Data for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	AROMATICS	STYRENE	100425	4676	UG/L	2	5	01/25/95	ND	10.00
						2	5	01/26/95	NC	11.77
BASE-NEUTRALS	AROMATICS	STYRENE	100425	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	NC	28.65
						2	3	02/23/95	NC	27.36
BASE-NEUTRALS	CHLOROBENZENES II	1,2-DICHLOROBENZENE	95501	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	ND	10.00
						2	3	02/23/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	ND	10.00
						2	3	02/23/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	4676	UG/L	2	5	01/24/95	ND	10.00
						2	5	01/25/95	ND	10.00
						2	5	01/26/95	ND	10.00
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	ND	10.00
						2	3	02/23/95	ND	10.00
BASE-NEUTRALS	PAHS	NAPHTHALENE	91203	4676	UG/L	2	5	01/24/95	ND	10.00
						2	5	01/25/95	ND	10.00
						2	5	01/26/95	ND	10.00
BASE-NEUTRALS	PAHS	NAPHTHALENE	91203	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	ND	10.00
						2	3	02/23/95	ND	10.00
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	4676	UG/L	2	5	01/24/95	ND	10.00
						2	5	01/25/95	ND	10.00
						2	5	01/26/95	ND	10.00

APPENDIX A.6
Listing of Daily Data for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	4677	UG/L	2	3	02/21/95	ND	10.00
						2	3	02/22/95	ND	10.00
						2	3	02/23/95	ND	10.00
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	4676	UG/L	2	5	01/24/95	ND	10.00
						2	5	01/25/95	ND	10.00
						2	5	01/26/95	ND	10.00
METAL	METALS	CHROMIUM	7440473	4677	UG/L	2	3	02/21/95	NC	11.90
						2	3	02/22/95	NC	30.30
						2	3	02/23/95	NC	16.20
METAL	METALS	ZINC	7440666	4677	UG/L	2	3	02/21/95	ND	6.00
						2	3	02/22/95	NC	15.20
						2	3	02/23/95	NC	13.00
VOLATILE	CHLOROMETHANES	METHYLENE CHLORIDE	75092	4677	UG/L	2	4,5	02/21/95	NC	645.17
						2	4,5	02/22/95	NC	3689.45
						2	4,5	02/23/95	NC	736.12
VOLATILE	KETONES, ALIPHATIC I	2-BUTANONE	78933	4676	UG/L	2	2	01/24/95	ND	50.00
						2	2	01/25/95	ND	50.00
						2	2	01/26/95	ND	50.00
VOLATILE	KETONES, ALIPHATIC I	2-BUTANONE	78933	4677	UG/L	2	2	02/21/95	NC	557.03
						2	2	02/22/95	NC	510.37
						2	2	02/23/95	NC	264.55
VOLATILE	KETONES, ALIPHATIC II	4-METHYL-2-PENTANONE	108101	4677	UG/L	2	3	02/21/95	NC	204.18
						2	3	02/22/95	NC	152.88
						2	3	02/23/95	NC	126.82

APPENDIX A.7
Listing of Daily Data for Food Grade Direct Subcategory: BPT, BCT, and NSPS
After Aggregation of Grabs and Duplicates within Sampling Date

Fraction	Group	Analyte Name	CAS Number	Episode	Unit	Technology Option	Sample Point	Sampling Date	NC/ND	Conc
		BOD 5-DAY (CARBONACEOUS)	C-002	FAC1	MG/L	2	4,5	04/03/95	NC	26.00
						2	4,5	04/24/95	NC	5.00
						2	4,5	05/15/95	NC	13.00
						2	4,5	06/02/95	NC	8.00
		HEXANE EXTRACTABLE MATERIAL	C-036	FAC1	MG/L	1	3	04/03/95	NC	107.00
						1	3	04/24/95	NC	390.00
						1	3	05/15/95	NC	101.00
						1	3	06/02/95	NC	82.90
						2	4,5	04/03/95	ND	5.00
						2	4,5	04/24/95	ND	5.00
						2	4,5	05/15/95	ND	5.00
						2	4,5	06/02/95	ND	5.00
		TOTAL SUSPENDED SOLIDS	C-009	FAC1	MG/L	2	4,5	04/03/95	NC	28.50
						2	4,5	04/24/95	NC	9.00
						2	4,5	05/15/95	NC	29.00
						2	4,5	06/02/95	NC	81.00

FAC1 contains episodes 4698, 4699, 4700, and 4729.

Appendices B.1 - B.7

Appendix B.1
Listing of Summary Statistics for Rail/Chemical Indirect Subcategory: PSES and PSNS

---------- Fraction= Group= Analyte Name=SGT-HEM CAS Number=C-037 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	0	39.92	19.16	39.83	39.92	23.00	57.00	.	.
FAC1	2	4	1	10.75	5.06	10.83	12.67	8.33	16.33	5.00	5.00
FAC1	3	4	1	10.75	5.06	10.83	12.67	8.33	16.33	5.00	5.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	1	78.89	81.52	58.46	101.85	24.45	188.63	10.00	10.00
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-HEXADECANE CAS Number=544763 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	2	30.55	34.97	14.82	51.11	19.65	82.57	10.00	10.00
FAC1	2	4	2	30.55	34.97	14.82	51.11	19.65	82.57	10.00	10.00
FAC1	3	4	2	30.55	34.97	14.82	51.11	19.65	82.57	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRADECANE CAS Number=629594 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	1	54.30	53.32	38.42	69.07	26.68	130.37	10.00	10.00
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix B.1
Listing of Summary Statistics for Rail/Chemical Indirect Subcategory: PSES and PSNS

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=FLUORANTHENE CAS Number=206440 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	2	15.99	10.37	11.25	21.97	12.50	31.45	10.00	10.00
FAC1	2	4	2	15.99	10.37	11.25	21.97	12.50	31.45	10.00	10.00
FAC1	3	4	2	15.99	10.37	11.25	21.97	12.50	31.45	10.00	10.00

---------- Fraction=METAL Group=METALS Analyte Name=ALUMINUM CAS Number=7429905 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	0	8882.50	6116.30	8080.00	8882.50	2970.00	16400.00	.	.
FAC1	2	4	0	8882.50	6116.30	8080.00	8882.50	2970.00	16400.00	.	.
FAC1	3	4	4	200.00	0.00	200.00	.	.	.	200.00	200.00

---------- Fraction=METAL Group=METALS Analyte Name=BARIUM CAS Number=7440393 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	4	200.00	0.00	200.00	.	.	.	200.00	200.00
FAC1	3	4	4	200.00	0.00	200.00	.	.	.	200.00	200.00

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix B.1
Listing of Summary Statistics for Rail/Chemical Indirect Subcategory: PSES and PSNS

---------- Fraction=METAL Group=METALS Analyte Name=COPPER CAS Number=7440508 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	4	25.00	0.00	25.00	.	.	.	25.00	25.00
FAC1	3	4	4	25.00	0.00	25.00	.	.	.	25.00	25.00

---------- Fraction=METAL Group=METALS Analyte Name=TITANIUM CAS Number=7440326 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	4	5.00	0.00	5.00	.	.	.	5.00	5.00
FAC1	3	4	4	5.00	0.00	5.00	.	.	.	5.00	5.00

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	3	21.35	2.70	20.00	25.40	25.40	25.40	20.00	20.00
FAC1	3	4	3	21.35	2.70	20.00	25.40	25.40	25.40	20.00	20.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix B.2
Listing of Summary Statistics for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

---------- Fraction= Group= Analyte Name=BOD 5-DAY (CARBONACEOUS) CAS Number=C-002 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	3	0	138.83	51.32	125.50	138.83	95.50	195.50	.	.
FAC1	1	3	0	138.83	51.32	125.50	138.83	95.50	195.50	.	.
FAC1	2	3	0	138.83	51.32	125.50	138.83	95.50	195.50	.	.
FAC1	2	3	0	138.83	51.32	125.50	138.83	95.50	195.50	.	.
FAC1	3	3	0	138.83	51.32	125.50	138.83	95.50	195.50	.	.
FAC1	3	3	0	138.83	51.32	125.50	138.83	95.50	195.50	.	.

---------- Fraction= Group= Analyte Name=CHEMICAL OXYGEN DEMAND (COD) CAS Number=C-004 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	0	858.90	1019.75	366.60	858.90	314.40	2388.00	.	.
FAC1	1	4	0	858.90	1019.75	366.60	858.90	314.40	2388.00	.	.
FAC1	2	4	0	858.90	1019.75	366.60	858.90	314.40	2388.00	.	.
FAC1	2	4	0	858.90	1019.75	366.60	858.90	314.40	2388.00	.	.
FAC1	3	4	0	858.90	1019.75	366.60	858.90	314.40	2388.00	.	.
FAC1	3	4	0	858.90	1019.75	366.60	858.90	314.40	2388.00	.	.

---------- Fraction= Group= Analyte Name=HEXANE EXTRACTABLE MATERIAL CAS Number=C-036 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	0	26.43	9.44	25.71	26.43	15.77	38.52	.	.
FAC1	1	4	0	26.43	9.44	25.71	26.43	15.77	38.52	.	.
FAC1	2	4	1	7.84	2.95	7.19	8.79	7.07	11.99	5.00	5.00
FAC1	2	4	1	7.84	2.95	7.19	8.79	7.07	11.99	5.00	5.00
FAC1	3	4	1	7.84	2.95	7.19	8.79	7.07	11.99	5.00	5.00
FAC1	3	4	1	7.84	2.95	7.19	8.79	7.07	11.99	5.00	5.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix B.2
Listing of Summary Statistics for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

---------- Fraction= Group= Analyte Name=TOTAL SUSPENDED SOLIDS CAS Number=C-009 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	0	54.25	52.03	31.00	54.25	23.00	132.00	.	.
FAC1	2	4	0	54.25	52.03	31.00	54.25	23.00	132.00	.	.
FAC1	3	4	1	9.00	6.49	7.00	10.67	4.50	18.00	4.00	4.00
FAC1	3	4	1	9.00	6.49	7.00	10.67	4.50	18.00	4.00	4.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	2	14.14	6.99	11.01	18.27	12.02	24.52	10.00	10.00
FAC1	1	4	2	14.14	6.99	11.01	18.27	12.02	24.52	10.00	10.00
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-HEXADECANE CAS Number=544763 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix B.2
Listing of Summary Statistics for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRADECANE CAS Number=629594 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=ANTHRACENE CAS Number=120127 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	1	42.93	36.39	38.45	53.90	15.06	84.81	10.00	10.00
FAC1	1	4	1	42.93	36.39	38.45	53.90	15.06	84.81	10.00	10.00
FAC1	2	4	1	42.93	36.39	38.45	53.90	15.06	84.81	10.00	10.00
FAC1	2	4	1	42.93	36.39	38.45	53.90	15.06	84.81	10.00	10.00
FAC1	3	4	1	42.93	36.39	38.45	53.90	15.06	84.81	10.00	10.00
FAC1	3	4	1	42.93	36.39	38.45	53.90	15.06	84.81	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=FLUORANTHENE CAS Number=206440 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	2	15.99	10.37	11.25	21.97	12.50	31.45	10.00	10.00
FAC1	1	4	2	15.99	10.37	11.25	21.97	12.50	31.45	10.00	10.00
FAC1	2	4	2	15.99	10.37	11.25	21.97	12.50	31.45	10.00	10.00
FAC1	2	4	2	15.99	10.37	11.25	21.97	12.50	31.45	10.00	10.00
FAC1	3	4	2	15.99	10.37	11.25	21.97	12.50	31.45	10.00	10.00
FAC1	3	4	2	15.99	10.37	11.25	21.97	12.50	31.45	10.00	10.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix B.2
Listing of Summary Statistics for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=PHENANTHRENE CAS Number=85018 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	1	36.22	33.18	27.69	44.96	10.43	79.50	10.00	10.00
FAC1	1	4	1	36.22	33.18	27.69	44.96	10.43	79.50	10.00	10.00
FAC1	2	4	1	36.22	33.18	27.69	44.96	10.43	79.50	10.00	10.00
FAC1	2	4	1	36.22	33.18	27.69	44.96	10.43	79.50	10.00	10.00
FAC1	3	4	1	36.22	33.18	27.69	44.96	10.43	79.50	10.00	10.00
FAC1	3	4	1	36.22	33.18	27.69	44.96	10.43	79.50	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=PYRENE CAS Number=129000 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	2	15.05	8.45	11.31	20.10	12.61	27.58	10.00	10.00
FAC1	1	4	2	15.05	8.45	11.31	20.10	12.61	27.58	10.00	10.00
FAC1	2	4	2	15.05	8.45	11.31	20.10	12.61	27.58	10.00	10.00
FAC1	2	4	2	15.05	8.45	11.31	20.10	12.61	27.58	10.00	10.00
FAC1	3	4	2	15.05	8.45	11.31	20.10	12.61	27.58	10.00	10.00
FAC1	3	4	2	15.05	8.45	11.31	20.10	12.61	27.58	10.00	10.00

---------- Fraction=METAL Group=METALS Analyte Name=ALUMINUM CAS Number=7429905 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	0	8882.50	6116.30	8080.00	8882.50	2970.00	16400.00	.	.
FAC1	2	4	0	8882.50	6116.30	8080.00	8882.50	2970.00	16400.00	.	.
FAC1	3	4	3	32.18	2.35	31.00	35.70	35.70	35.70	31.00	31.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix B.2
Listing of Summary Statistics for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

Fraction=METAL Group=METALS Analyte Name=BARIUM CAS Number=7440393 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	0	113.93	36.55	115.00	113.93	70.70	155.00	.	.
FAC1	3	4	0	113.93	36.55	115.00	113.93	70.70	155.00	.	.

Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC1	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00

Fraction=METAL Group=METALS Analyte Name=COPPER CAS Number=7440508 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	4	8.00	0.00	8.00	.	.	.	8.00	8.00
FAC1	3	4	4	8.00	0.00	8.00	.	.	.	8.00	8.00

Fraction=METAL Group=METALS Analyte Name=TITANIUM CAS Number=7440326 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	4	3.00	0.00	3.00	.	.	.	3.00	3.00
FAC1	3	4	4	3.00	0.00	3.00	.	.	.	3.00	3.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix B.2
Listing of Summary Statistics for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	2	14.65	7.74	12.10	20.30	15.20	25.40	9.00	9.00
FAC1	3	4	2	14.65	7.74	12.10	20.30	15.20	25.40	9.00	9.00

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix B.3
Listing of Summary Statistics for Barge/Chemical and Petroleum Indirect Subcategory: PSNS

---------- Fraction= Group= Analyte Name=HEXANE EXTRACTABLE MATERIAL CAS Number=C-036 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	0	36.11	17.85	33.20	36.11	17.60	60.43	.	.
FAC2	2	4	3	5.02	0.03	5.00	5.07	5.07	5.07	5.00	5.00
FAC3	2	4	1	12.71	12.98	6.91	15.28	5.27	32.03	5.00	5.00
FAC2	3	4	3	5.02	0.03	5.00	5.07	5.07	5.07	5.00	5.00
FAC3	3	4	1	12.71	12.98	6.91	15.28	5.27	32.03	5.00	5.00
FAC2	4	4	0	26.69	8.54	24.68	26.69	19.40	38.00	.	.
FAC3	4	4	0	78.76	67.30	66.60	78.76	10.33	171.50	.	.

---------- Fraction= Group= Analyte Name=SGT-HEM CAS Number=C-037 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	4	5.00	0.00	5.00	.	.	.	5.00	5.00
FAC3	2	4	4	5.00	0.00	5.00	.	.	.	5.00	5.00
FAC3	3	4	4	5.00	0.00	5.00	.	.	.	5.00	5.00
FAC2	4	4	0	12.34	10.50	8.20	12.34	5.33	27.63	.	.
FAC3	4	4	1	13.59	7.83	14.46	16.45	8.90	20.42	5.00	5.00

---------- Fraction=BASE-NEUTRALS Group=AROMATICS Analyte Name=P-CYMENE CAS Number=99876 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	2	4	3	10.76	1.51	10.00	13.02	13.02	13.02	10.00	10.00
FAC3	3	4	3	10.76	1.51	10.00	13.02	13.02	13.02	10.00	10.00
FAC2	4	4	2	13.48	4.45	11.96	11.96	11.59	12.33	10.00	20.00
FAC3	4	4	3	56.73	93.47	10.00	196.94	196.94	196.94	10.00	10.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.3
Listing of Summary Statistics for Barge/Chemical and Petroleum Indirect Subcategory: PSNS

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DECANE CAS Number=124185 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	2	257.77	489.51	14.53	505.53	19.07	992.00	10.00	10.00
FAC3	1	4	3	60.71	101.43	10.00	212.86	212.86	212.86	10.00	10.00
FAC2	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	4	4	2	132.93	226.89	24.54	255.87	39.09	472.65	10.00	10.00
FAC3	4	4	0	783.16	747.13	640.16	783.16	34.73	1817.60	.	.

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DOCOSANE CAS Number=629970 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	40.51	61.01	10.00	132.02	132.02	132.02	10.00	10.00
FAC3	2	4	3	17.88	15.77	10.00	41.54	41.54	41.54	10.00	10.00
FAC3	3	4	3	17.88	15.77	10.00	41.54	41.54	41.54	10.00	10.00
FAC2	4	4	2	34.88	48.10	11.25	59.75	12.50	107.00	10.00	10.00
FAC3	4	4	1	61.57	83.30	25.17	78.76	20.84	185.95	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	453.42	886.85	10.00	1783.70	1783.70	1783.70	10.00	10.00
FAC3	1	4	3	187.82	355.65	10.00	721.30	721.30	721.30	10.00	10.00
FAC2	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	4	4	1	184.25	295.74	50.21	242.34	35.62	626.59	10.00	10.00
FAC3	4	4	2	888.12	1049.13	723.20	1766.25	1436.40	2096.10	10.00	10.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.3
Listing of Summary Statistics for Barge/Chemical and Petroleum Indirect Subcategory: PSNS

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-EICOSANE CAS Number=112958 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	1	133.09	228.31	23.68	174.13	10.19	475.02	10.00	10.00
FAC3	2	4	3	39.62	59.23	10.00	128.46	128.46	128.46	10.00	10.00
FAC3	3	4	3	39.62	59.23	10.00	128.46	128.46	128.46	10.00	10.00
FAC2	4	4	1	37.51	47.40	15.95	46.68	10.29	108.15	10.00	10.00
FAC3	4	4	1	179.92	250.58	78.51	236.56	76.07	552.64	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-OCTADECANE CAS Number=593453 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	1	197.98	367.73	16.20	260.64	10.41	749.52	10.00	10.00
FAC3	2	4	3	44.20	68.40	10.00	146.80	146.80	146.80	10.00	10.00
FAC3	3	4	3	44.20	68.40	10.00	146.80	146.80	146.80	10.00	10.00
FAC2	4	4	2	17.28	6.17	17.45	19.56	14.90	24.22	10.00	20.00
FAC3	4	4	0	261.60	418.43	72.13	261.60	15.16	887.00	.	.

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRACOSANE CAS Number=646311 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	26.83	33.66	10.00	77.31	77.31	77.31	10.00	10.00
FAC3	2	4	3	26.83	33.66	10.00	77.31	77.31	77.31	10.00	10.00
FAC3	3	4	3	26.83	33.66	10.00	77.31	77.31	77.31	10.00	10.00
FAC2	4	4	2	34.80	44.48	13.95	59.60	17.90	101.29	10.00	10.00
FAC3	4	4	1	44.86	56.43	20.15	56.48	17.89	129.15	10.00	10.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.3
Listing of Summary Statistics for Barge/Chemical and Petroleum Indirect Subcategory: PSNS

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRADECANE CAS Number=629594 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	1	2131.87	4183.54	55.19	2839.16	50.62	8407.10	10.00	10.00
FAC3	1	4	3	76.69	133.38	10.00	276.76	276.76	276.76	10.00	10.00
FAC2	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	4	4	1	232.02	391.58	49.71	306.03	43.39	818.67	10.00	10.00
FAC3	4	4	1	1789.43	2858.77	557.12	2382.58	168.48	6033.50	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=1-METHYLPHENANTHRENE CAS Number=832699 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	2	31.20	39.63	12.12	52.40	14.23	90.58	10.00	10.00
FAC3	2	4	2	31.20	39.63	12.12	52.40	14.23	90.58	10.00	10.00
FAC3	3	4	2	31.20	39.63	12.12	52.40	14.23	90.58	10.00	10.00
FAC2	4	4	4	12.50	5.00	10.00	.	.	.	10.00	20.00
FAC3	4	4	1	35.30	38.70	19.21	43.73	15.24	92.77	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=PYRENE CAS Number=129000 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	14.33	8.66	10.00	27.33	27.33	27.33	10.00	10.00
FAC3	2	4	3	14.33	8.66	10.00	27.33	27.33	27.33	10.00	10.00
FAC3	3	4	3	14.33	8.66	10.00	27.33	27.33	27.33	10.00	10.00
FAC2	4	4	4	12.50	5.00	10.00	.	.	.	10.00	20.00
FAC3	4	4	3	17.18	14.36	10.00	38.72	38.72	38.72	10.00	10.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.3
Listing of Summary Statistics for Barge/Chemical and Petroleum Indirect Subcategory: PSNS

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=BIS(2-ETHYLHEXYL) PHTHALATE CAS Number=117817 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	2	37.11	39.03	22.83	64.21	35.66	92.77	10.00	10.00
FAC2	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	3	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	4	4	3	52.10	84.21	10.00	178.41	178.41	178.41	10.00	10.00
FAC3	4	4	1	34.14	38.40	17.71	42.19	12.72	91.16	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=DI-N-OCTYL PHTHALATE CAS Number=117840 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	37.48	54.96	10.00	119.91	119.91	119.91	10.00	10.00
FAC3	2	4	3	37.48	54.96	10.00	119.91	119.91	119.91	10.00	10.00
FAC3	3	4	3	37.48	54.96	10.00	119.91	119.91	119.91	10.00	10.00
FAC2	4	4	4	12.50	5.00	10.00	.	.	.	10.00	20.00
FAC3	4	4	2	46.18	67.45	13.75	82.37	17.51	147.22	10.00	10.00

---------- Fraction=METAL Group=METALS Analyte Name=CADMIUM CAS Number=7440439 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	2	3.56	1.79	3.74	3.82	2.48	5.16	1.60	5.00
FAC3	2	4	2	3.56	1.79	3.74	3.82	2.48	5.16	1.60	5.00
FAC3	3	4	2	3.56	1.79	3.74	3.82	2.48	5.16	1.60	5.00
FAC3	4	4	3	3.38	2.06	3.30	5.31	5.31	5.31	1.60	5.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.3
Listing of Summary Statistics for Barge/Chemical and Petroleum Indirect Subcategory: PSNS

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	4	4.45	3.70	2.60	.	.	.	2.60	10.00
FAC3	2	4	4	4.45	3.70	2.60	.	.	.	2.60	10.00
FAC3	3	4	4	4.45	3.70	2.60	.	.	.	2.60	10.00
FAC3	4	4	2	11.14	10.73	8.55	19.68	14.50	24.86	2.60	2.60

---------- Fraction=METAL Group=METALS Analyte Name=COPPER CAS Number=7440508 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	1	241.95	436.21	35.67	322.23	15.84	895.36	1.10	1.10
FAC3	2	4	1	241.95	436.21	35.67	322.23	15.84	895.36	1.10	1.10
FAC3	3	4	1	241.95	436.21	35.67	322.23	15.84	895.36	1.10	1.10
FAC3	4	4	0	72.02	60.36	58.86	72.02	15.57	154.78	.	.

---------- Fraction=METAL Group=METALS Analyte Name=LEAD CAS Number=7439921 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	4	36.80	6.80	33.40	.	.	.	33.40	47.00
FAC3	2	4	4	36.80	6.80	33.40	.	.	.	33.40	47.00
FAC3	3	4	4	36.80	6.80	33.40	.	.	.	33.40	47.00
FAC3	4	4	4	36.80	6.80	33.40	.	.	.	33.40	47.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.3
Listing of Summary Statistics for Barge/Chemical and Petroleum Indirect Subcategory: PSNS

---------- Fraction=METAL Group=METALS Analyte Name=NICKEL CAS Number=7440020 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	0	275.54	290.45	134.49	275.54	122.07	711.10	.	.
FAC3	2	4	0	275.54	290.45	134.49	275.54	122.07	711.10	.	.
FAC3	3	4	3	8.88	4.34	7.35	8.91	8.91	8.91	5.80	15.00
FAC3	4	4	0	379.20	448.54	168.77	379.20	128.34	1050.90	.	.

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	0	1228.49	1399.91	790.63	1228.49	126.00	3206.70	.	.
FAC3	2	4	0	1228.49	1399.91	790.63	1228.49	126.00	3206.70	.	.
FAC3	3	4	1	81.46	102.76	46.47	108.14	34.00	231.50	1.40	1.40
FAC3	4	4	0	2154.42	2463.56	1138.59	2154.42	530.90	5809.60	.	.

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.4
Listing of Summary Statistics for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

---------- Fraction= Group= Analyte Name=BOD 5-DAY (CARBONACEOUS) CAS Number=C-002 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC2	1	4	0	116.63	57.79	117.25	116.63	53.00	179.00	.	.
FAC3	1	4	0	427.25	305.98	335.50	427.25	172.00	866.00	.	.
FAC3	2	4	0	15.25	13.13	11.75	15.25	3.50	34.00	.	.
FAC2	3	4	0	2597.50	1195.67	2855.00	2597.50	1000.00	3680.00	.	.
FAC3	3	4	0	7222.50	2600.03	7590.00	7222.50	4100.00	9610.00	.	.

---------- Fraction= Group= Analyte Name=CHEMICAL OXYGEN DEMAND (COD) CAS Number=C-004 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC2	1	4	0	232.50	110.92	238.75	232.50	112.50	340.00	.	.
FAC3	1	4	0	908.25	852.53	759.50	908.25	134.00	1980.00	.	.
FAC3	2	4	0	25.13	25.87	16.25	25.13	5.00	63.00	.	.
FAC2	3	4	0	1550.75	482.38	1715.00	1550.75	863.00	1910.00	.	.
FAC3	3	4	0	9655.00	2115.44	10325.00	9655.00	6670.00	11300.00	.	.

---------- Fraction= Group= Analyte Name=HEXANE EXTRACTABLE MATERIAL CAS Number=C-036 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC2	1	4	2	5.09	0.14	5.03	5.18	5.07	5.29	5.00	5.00
FAC3	1	4	1	13.05	12.85	7.58	15.73	5.27	32.03	5.00	5.00
FAC2	2	4	2	5.09	0.14	5.03	5.18	5.07	5.29	5.00	5.00
FAC3	2	4	1	13.05	12.85	7.58	15.73	5.27	32.03	5.00	5.00
FAC2	3	4	0	26.69	8.54	24.68	26.69	19.40	38.00	.	.
FAC3	3	4	0	78.76	67.30	66.60	78.76	10.33	171.50	.	.

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.4
Listing of Summary Statistics for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

---------- Fraction= Group= Analyte Name=TOTAL SUSPENDED SOLIDS CAS Number=C-009 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	0	251.75	84.85	235.50	251.75	172.00	364.00	.	.
FAC3	2	4	2	4.88	1.44	4.25	5.75	4.50	7.00	4.00	4.00
FAC2	3	4	0	162.50	234.70	57.50	162.50	22.00	513.00	.	.
FAC3	3	4	0	70.50	53.04	45.00	70.50	42.00	150.00	.	.

---------- Fraction=BASE-NEUTRALS Group=AROMATICS Analyte Name=P-CYMENE CAS Number=99876 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	10.76	1.51	10.00	13.02	13.02	13.02	10.00	10.00
FAC3	2	4	3	10.76	1.51	10.00	13.02	13.02	13.02	10.00	10.00
FAC2	3	4	2	13.48	4.45	11.96	11.96	11.59	12.33	10.00	20.00
FAC3	3	4	3	56.73	93.47	10.00	196.94	196.94	196.94	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DECANE CAS Number=124185 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC2	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	1	4	3	60.71	101.43	10.00	212.86	212.86	212.86	10.00	10.00
FAC3	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	3	4	2	132.93	226.89	24.54	255.87	39.09	472.65	10.00	10.00
FAC3	3	4	0	783.16	747.13	640.16	783.16	34.73	1817.60	.	.

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.4
Listing of Summary Statistics for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DOCOSANE CAS Number=629970 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	17.88	15.77	10.00	41.54	41.54	41.54	10.00	10.00
FAC3	2	4	3	17.88	15.77	10.00	41.54	41.54	41.54	10.00	10.00
FAC2	3	4	2	34.88	48.10	11.25	59.75	12.50	107.00	10.00	10.00
FAC3	3	4	1	61.57	83.30	25.17	78.76	20.84	185.95	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC2	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	1	4	3	187.82	355.65	10.00	721.30	721.30	721.30	10.00	10.00
FAC3	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	3	4	1	184.25	295.74	50.21	242.34	35.62	626.59	10.00	10.00
FAC3	3	4	2	888.12	1049.13	723.20	1766.25	1436.40	2096.10	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-EICOSANE CAS Number=112958 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	39.62	59.23	10.00	128.46	128.46	128.46	10.00	10.00
FAC3	2	4	3	39.62	59.23	10.00	128.46	128.46	128.46	10.00	10.00
FAC2	3	4	1	37.51	47.40	15.95	46.68	10.29	108.15	10.00	10.00
FAC3	3	4	1	179.92	250.58	78.51	236.56	76.07	552.64	10.00	10.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.4
Listing of Summary Statistics for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-OCTADECANE CAS Number=593453 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	44.20	68.40	10.00	146.80	146.80	146.80	10.00	10.00
FAC3	2	4	3	44.20	68.40	10.00	146.80	146.80	146.80	10.00	10.00
FAC2	3	4	2	17.28	6.17	17.45	19.56	14.90	24.22	10.00	20.00
FAC3	3	4	0	261.60	418.43	72.13	261.60	15.16	887.00	.	.

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRACOSANE CAS Number=646311 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	13.00	6.00	10.00	21.99	21.99	21.99	10.00	10.00
FAC3	2	4	3	13.00	6.00	10.00	21.99	21.99	21.99	10.00	10.00
FAC2	3	4	2	34.80	44.48	13.95	59.60	17.90	101.29	10.00	10.00
FAC3	3	4	1	44.86	56.43	20.15	56.48	17.89	129.15	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRADECANE CAS Number=629594 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC2	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	1	4	3	76.69	133.38	10.00	276.76	276.76	276.76	10.00	10.00
FAC3	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	3	4	1	232.02	391.58	49.71	306.03	43.39	818.67	10.00	10.00
FAC3	3	4	1	1789.43	2858.77	557.12	2382.58	168.48	6033.50	10.00	10.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.4
Listing of Summary Statistics for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=1-METHYLPHENANTHRENE CAS Number=832699 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	17.05	14.11	10.00	38.22	38.22	38.22	10.00	10.00
FAC3	2	4	3	17.05	14.11	10.00	38.22	38.22	38.22	10.00	10.00
FAC2	3	4	4	12.50	5.00	10.00	.	.	.	10.00	20.00
FAC3	3	4	1	35.30	38.70	19.21	43.73	15.24	92.77	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=PYRENE CAS Number=129000 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	3	4	4	12.50	5.00	10.00	.	.	.	10.00	20.00
FAC3	3	4	3	17.18	14.36	10.00	38.72	38.72	38.72	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=BIS(2-ETHYLHEXYL) PHTHALATE CAS Number=117817 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC2	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	1	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC3	2	4	4	10.00	0.00	10.00	.	.	.	10.00	10.00
FAC2	3	4	3	52.10	84.21	10.00	178.41	178.41	178.41	10.00	10.00
FAC3	3	4	1	34.14	38.40	17.71	42.19	12.72	91.16	10.00	10.00

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.4
Listing of Summary Statistics for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=DI-N-OCTYL PHTHALATE CAS Number=117840 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	14.31	8.63	10.00	27.25	27.25	27.25	10.00	10.00
FAC3	2	4	3	14.31	8.63	10.00	27.25	27.25	27.25	10.00	10.00
FAC2	3	4	4	12.50	5.00	10.00	.	.	.	10.00	20.00
FAC3	3	4	2	46.18	67.45	13.75	82.37	17.51	147.22	10.00	10.00

---------- Fraction=METAL Group=METALS Analyte Name=CADMIUM CAS Number=7440439 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	2	3.28	1.93	3.25	3.25	1.60	4.90	1.60	5.00
FAC3	2	4	2	3.28	1.93	3.25	3.25	1.60	4.90	1.60	5.00
FAC3	3	4	3	3.38	2.06	3.30	5.31	5.31	5.31	1.60	5.00

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	2	21.89	33.22	6.80	41.18	11.00	71.36	2.60	2.60
FAC3	2	4	2	21.89	33.22	6.80	41.18	11.00	71.36	2.60	2.60
FAC3	3	4	2	11.14	10.73	8.55	19.68	14.50	24.86	2.60	2.60

---------- Fraction=METAL Group=METALS Analyte Name=COPPER CAS Number=7440508 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	0	40.36	13.63	45.38	40.36	20.66	50.00	.	.
FAC3	2	4	0	40.36	13.63	45.38	40.36	20.66	50.00	.	.

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Fraction=METAL Group=METALS Analyte Name=COPPER CAS Number=7440508 Unit=UG/L
(continued)

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	3	4	0	72.02	60.36	58.86	72.02	15.57	154.78	.	.

Fraction=METAL Group=METALS Analyte Name=LEAD CAS Number=7439921 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	3	36.93	6.72	33.67	33.93	33.93	33.93	33.40	47.00
FAC3	2	4	3	36.93	6.72	33.67	33.93	33.93	33.93	33.40	47.00
FAC3	3	4	4	36.80	6.80	33.40	.	.	.	33.40	47.00

Fraction=METAL Group=METALS Analyte Name=NICKEL CAS Number=7440020 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	0	289.45	89.32	279.12	289.45	212.00	387.57	.	.
FAC3	2	4	3	8.88	4.34	7.35	8.91	8.91	8.91	5.80	15.00
FAC3	3	4	0	379.20	448.54	168.77	379.20	128.34	1050.90	.	.

Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC3	1	4	0	2863.93	1578.81	2363.00	2863.93	1590.00	5139.70	.	.
FAC3	2	4	1	81.46	102.76	46.47	108.14	34.00	231.50	1.40	1.40
FAC3	3	4	0	2154.42	2463.56	1138.59	2154.42	530.90	5809.60	.	.

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix B.5
Listing of Summary Statistics for Truck/Chemical Indirect Subcategory: PSES and PSNS

---------- Fraction= Group= Analyte Name=CHEMICAL OXYGEN DEMAND (COD) CAS Number=C-004 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	0	822.00	474.56	771.00	822.00	375.00	1320.00	.	.
4677	1	3	0	3800.00	81.85	3820.00	3800.00	3710.00	3870.00	.	.
4677	2	3	0	956.33	280.90	871.00	956.33	728.00	1270.00	.	.

---------- Fraction=BASE-NEUTRALS Group=AROMATICS Analyte Name=STYRENE CAS Number=100425 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	2	0	698.91	120.88	698.91	698.91	613.44	784.39	.	.
4677	1	3	1	1247.82	1072.84	1823.78	1866.73	1823.78	1909.68	10.00	10.00
4676	2	3	0	45.00	16.53	45.84	45.00	28.07	61.09	.	.
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=CHLOROBENZENES II Analyte Name=1,2-DICHLOROBENZENE CAS Number=95501 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

Appendix B.5
Listing of Summary Statistics for Truck/Chemical Indirect Subcategory: PSES and PSNS

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-HEXADECANE CAS Number=544763 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4676	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=BIS(2-ETHYLHEXYL) PHTHALATE CAS Number=117817 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	1	20.78	18.06	10.71	26.17	10.71	41.63	10.00	10.00
4677	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4676	2	3	1	20.78	18.06	10.71	26.17	10.71	41.63	10.00	10.00
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=DI-N-OCTYL PHTHALATE CAS Number=117840 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4676	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	0	19.47	9.63	16.20	19.47	11.90	30.30	.	.
4677	2	3	0	19.47	9.63	16.20	19.47	11.90	30.30	.	.

Appendix B.5
Listing of Summary Statistics for Truck/Chemical Indirect Subcategory: PSES and PSNS

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	1	11.40	4.80	13.00	14.10	13.00	15.20	6.00	6.00
4677	2	3	1	11.40	4.80	13.00	14.10	13.00	15.20	6.00	6.00

Appendix B.6
Listing of Summary Statistics for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

---------- Fraction= Group= Analyte Name=BOD 5-DAY (CARBONACEOUS) CAS Number=C-002 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	0	18.10	2.57	17.20	18.10	16.10	21.00	.	.
4676	2	3	0	18.10	2.57	17.20	18.10	16.10	21.00	.	.

---------- Fraction= Group= Analyte Name=CHEMICAL OXYGEN DEMAND (COD) CAS Number=C-004 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	0	98.64	56.95	92.52	98.64	45.00	158.40	.	.
4677	1	3	0	456.00	9.82	458.40	456.00	445.20	464.40	.	.
4676	2	3	0	98.64	56.95	92.52	98.64	45.00	158.40	.	.
4677	2	3	0	456.00	9.82	458.40	456.00	445.20	464.40	.	.

---------- Fraction= Group= Analyte Name=HEXANE EXTRACTABLE MATERIAL CAS Number=C-036 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	2	5.23	0.40	5.00	5.69	5.69	5.69	5.00	5.00
4677	1	3	0	5.43	0.12	5.42	5.43	5.33	5.56	.	.
4676	2	3	2	5.23	0.40	5.00	5.69	5.69	5.69	5.00	5.00
4677	2	3	0	5.43	0.12	5.42	5.43	5.33	5.56	.	.

---------- Fraction= Group= Analyte Name=TOTAL ORGANIC CARBON (TOC) CAS Number=C-012 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	0	46.74	14.26	53.65	46.74	30.34	56.24	.	.
4677	1	3	0	414.40	18.78	410.70	414.40	397.75	434.75	.	.

Appendix B.6
Listing of Summary Statistics for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

---------- Fraction= Group= Analyte Name=TOTAL ORGANIC CARBON (TOC) CAS Number=C-012 Unit=MG/L ----------
(continued)

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	2	3	0	46.74	14.26	53.65	46.74	30.34	56.24	.	.
4677	2	3	0	414.40	18.78	410.70	414.40	397.75	434.75	.	.

---------- Fraction= Group= Analyte Name=TOTAL SUSPENDED SOLIDS CAS Number=C-009 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	0	82.67	54.60	92.00	82.67	24.00	132.00	.	.
4677	1	3	0	58.33	17.56	60.00	58.33	40.00	75.00	.	.
4676	2	3	0	33.67	2.89	32.00	33.67	32.00	37.00	.	.
4677	2	3	0	19.50	19.92	8.00	19.50	8.00	42.50	.	.

---------- Fraction=BASE-NEUTRALS Group=AROMATICS Analyte Name=STYRENE CAS Number=100425 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	2	1	10.88	1.25	10.88	11.77	11.77	11.77	10.00	10.00
4677	1	3	1	22.00	10.41	27.36	28.00	27.36	28.65	10.00	10.00
4676	2	2	1	10.88	1.25	10.88	11.77	11.77	11.77	10.00	10.00
4677	2	3	1	22.00	10.41	27.36	28.00	27.36	28.65	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=CHLOROBENZENES II Analyte Name=1,2-DICHLOROBENZENE CAS Number=95501 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

Fraction=BASE-NEUTRALS Group=CHLOROBENZENES II Analyte Name=1,2-DICHLOROBENZENE CAS Number=95501 Unit=UG/L (continued)

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-HEXADECANE CAS Number=544763 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4676	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=NAPHTHALENE CAS Number=91203 Unit=UG/L

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4676	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

Appendix B.6
Listing of Summary Statistics for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=BIS(2-ETHYLHEXYL) PHTHALATE CAS Number=117817 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4676	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4677	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=DI-N-OCTYL PHTHALATE CAS Number=117840 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00
4676	2	3	3	10.00	0.00	10.00	.	.	.	10.00	10.00

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	0	19.47	9.63	16.20	19.47	11.90	30.30	.	.
4677	2	3	0	19.47	9.63	16.20	19.47	11.90	30.30	.	.

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	1	11.40	4.80	13.00	14.10	13.00	15.20	6.00	6.00
4677	2	3	1	11.40	4.80	13.00	14.10	13.00	15.20	6.00	6.00

Appendix B.6
Listing of Summary Statistics for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

---------- Fraction=VOLATILE Group=CHLOROMETHANES Analyte Name=METHYLENE CHLORIDE CAS Number=75092 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	0	2170.78	676.66	1816.42	2170.78	1744.89	2951.02	.	.
4677	2	3	0	1690.25	1731.96	736.12	1690.25	645.17	3689.45	.	.

---------- Fraction=VOLATILE Group=KETONES, ALIPHATIC I Analyte Name=2-BUTANONE CAS Number=78933 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4676	1	3	3	50.00	0.00	50.00	.	.	.	50.00	50.00
4677	1	3	0	443.98	157.14	510.37	443.98	264.55	557.03	.	.
4676	2	3	3	50.00	0.00	50.00	.	.	.	50.00	50.00
4677	2	3	0	443.98	157.14	510.37	443.98	264.55	557.03	.	.

---------- Fraction=VOLATILE Group=KETONES, ALIPHATIC II Analyte Name=4-METHYL-2-PENTANONE CAS Number=108101 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
4677	1	3	0	161.29	39.36	152.88	161.29	126.82	204.18	.	.
4677	2	3	0	161.29	39.36	152.88	161.29	126.82	204.18	.	.

Appendix B.7
Listing of Summary Statistics for Food Grade Subcategory: BPT, BCT, and NSPS

---------- Fraction=' ' Group=' ' Analyte Name=BOD 5-DAY (CARBONACEOUS) CAS Number=C-002 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	0	13.00	9.27	10.50	13.00	5.00	26.00	.	.

---------- Fraction=' ' Group=' ' Analyte Name=HEXANE EXTRACTABLE MATERIAL CAS Number=C-036 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	1	4	0	170.23	146.87	104.00	170.23	82.90	390.00	.	.
FAC1	2	4	4	5.00	0.00	5.00	.	.	.	5.00	5.00

---------- Fraction=' ' Group=' ' Analyte Name=TOTAL SUSPENDED SOLIDS CAS Number=C-009 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Obs Std Dev	Obs Median Value	Mean Value NC	Min Value NC	Max Value NC	Min Value ND	Max Value ND
FAC1	2	4	0	36.88	30.86	28.75	36.88	9.00	81.00	.	.

FAC1 contains episodes 4698, 4699, 4700, and 4729.

Appendices C.1 - C.7

Appendix C.1
Facility-Level Long-term Averages and Variability Factors for Rail/Chemical Indirect Subcategory: PSES and PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction= Group= Analyte Name=SGT-HEM CAS Number=C-037 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	0	39.90	41.4	19.20	22.60	2.88	N/A
FAC1	3	4	1	10.80	11.0	5.06	5.27	2.39	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	1	78.90	99.1	81.50	163	7.56	N/A
FAC1	3	4	4	10.00	10.0	0.00	0	.	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-HEXADECANE CAS Number=544763 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	2	30.60	38.7	35.00	70.2	8.37	N/A
FAC1	3	4	2	30.60	38.7	35.00	70.2	8.37	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRADECANE CAS Number=629594 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	1	54.30	60.2	53.30	69.2	5.45	N/A
FAC1	3	4	4	10.00	10.0	0.00	0.0	.	N/A

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix C.1
Facility-Level Long-term Averages and Variability Factors for Rail/Chemical Indirect Subcategory: PSES and PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=FLUORANTHENE CAS Number=206440 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	2	16.00	17.3	10.40	14.6	4.38	N/A
FAC1	3	4	2	16.00	17.3	10.40	14.6	4.38	N/A

---------- Fraction=METAL Group=METALS Analyte Name=ALUMINUM CAS Number=7429905 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	0	8880.00	9730	6120.00	8810	4.48	N/A

---------- Fraction=METAL Group=METALS Analyte Name=BARIUM CAS Number=7440393 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	4	200.00	200	0.00	0	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	4	10.00	10	0.00	0	.	N/A

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix C.1
Facility-Level Long-term Averages and Variability Factors for Rail/Chemical Indirect Subcategory: PSES and PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=METAL Group=METALS Analyte Name=COPPER CAS Number=7440508 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	4	25.00	25	0.00	0	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=TITANIUM CAS Number=7440326 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	4	5.00	5	0.00	0	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	3	21.40	21.4	2.70	2.7	.	N/A

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix C.2

Facility-Level Long-term Averages and Variability Factors for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction= Group= Analyte Name=BOD 5-DAY (CARBONACEOUS) CAS Number=C-002 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	3	0	139.00	139	51.30	51.3	.	.
FAC1	2	3	0	139.00	139	51.30	51.3	.	.
FAC1	3	3	0	139.00	139	51.30	51.3	.	.

---------- Fraction= Group= Analyte Name=CHEMICAL OXYGEN DEMAND (COD) CAS Number=C-004 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	0	859.00	898	1020.00	1120	5.93	N/A
FAC1	2	4	0	859.00	898	1020.00	1120	5.93	N/A
FAC1	3	4	0	859.00	898	1020.00	1120	5.93	N/A

---------- Fraction= Group= Analyte Name=HEXANE EXTRACTABLE MATERIAL CAS Number=C-036 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	0	26.40	26.90	9.44	10.30	2.21	1.34
FAC1	2	4	1	7.84	7.93	2.95	2.88	2.07	1.32
FAC1	3	4	1	7.84	7.93	2.95	2.88	2.07	1.32

---------- Fraction= Group= Analyte Name=TOTAL SUSPENDED SOLIDS CAS Number=C-009 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	0	54.30	56.40	52.00	52.7	4.61	1.88
FAC1	3	4	1	9.00	9.74	6.49	8.6	4.38	1.83

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix C.2
Facility-Level Long-term Averages and Variability Factors for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	2	14.10	14.7	6.99	8.81	3.28	N/A
FAC1	2	4	4	10.00	10.0	0.00	0.00	.	N/A
FAC1	3	4	4	10.00	10.0	0.00	0.00	.	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-HEXADECANE CAS Number=544763 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	4	10.00	10	0.00	0	.	N/A
FAC1	2	4	4	10.00	10	0.00	0	.	N/A
FAC1	3	4	4	10.00	10	0.00	0	.	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRADECANE CAS Number=629594 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	4	10.00	10	0.00	0	.	N/A
FAC1	2	4	4	10.00	10	0.00	0	.	N/A
FAC1	3	4	4	10.00	10	0.00	0	.	N/A

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=ANTHRACENE CAS Number=120127 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	1	42.90	51.6	36.40	69.8	6.39	N/A
FAC1	2	4	1	42.90	51.6	36.40	69.8	6.39	N/A
FAC1	3	4	1	42.90	51.6	36.40	69.8	6.39	N/A

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix C.2
Facility-Level Long-term Averages and Variability Factors for Rail/Chemical-Direct Subcategory: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=FLUORANTHENE CAS Number=206440 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	2	16.00	17.3	10.40	14.6	4.38	N/A
FAC1	2	4	2	16.00	17.3	10.40	14.6	4.38	N/A
FAC1	3	4	2	16.00	17.3	10.40	14.6	4.38	N/A

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=PHENANTHRENE CAS Number=85018 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	1	36.20	45.9	33.20	73.7	7.42	N/A
FAC1	2	4	1	36.20	45.9	33.20	73.7	7.42	N/A
FAC1	3	4	1	36.20	45.9	33.20	73.7	7.42	N/A

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=PYRENE CAS Number=129000 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	2	15.00	15.9	8.45	10.9	3.66	N/A
FAC1	2	4	2	15.00	15.9	8.45	10.9	3.66	N/A
FAC1	3	4	2	15.00	15.9	8.45	10.9	3.66	N/A

---------- Fraction=METAL Group=METALS Analyte Name=ALUMINUM CAS Number=7429905 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	0	8880.00	9730	6120.00	8810	4.48	N/A

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix C.2

Facility-Level Long-term Averages and Variability Factors for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=METAL Group=METALS Analyte Name=BARIUM CAS Number=7440393 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	0	114.00	116	36.60	40.7	2.09	N/A

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	4	10.00	10	0.00	0	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=COPPER CAS Number=7440508 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	4	8.00	8	0.00	0	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=TITANIUM CAS Number=7440326 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	4	3.00	3	0.00	0	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	2	14.70	15	7.74	8.18	2.76	N/A

FAC1 contains episodes 4717, 4718, 4719, and 4730.

Appendix C.3
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Indirect Subcategory: PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction= Group= Analyte Name=SGT-HEM CAS Number=C-037 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	4	5.00	5	0.00	0	.	N/A

---------- Fraction=BASE-NEUTRALS Group=AROMATICS Analyte Name=P-CYMENE CAS Number=99876 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	3	10.80	10.8	1.51	1.51	.	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DECANE CAS Number=124185 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	2	4	4	10.00	10	0.00	0	.	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DOCOSANE CAS Number=629970 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	3	17.90	17.9	15.80	15.8	.	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.3

Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Indirect Subcategory: PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	2	4	4	10.00	10	0.00	0	.	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-EICOSANE CAS Number=112958 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	3	39.60	39.6	59.20	59.2	.	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-OCTADECANE CAS Number=593453 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	3	44.20	44.2	68.40	68.4	.	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRACOSANE CAS Number=646311 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	3	26.80	26.8	33.70	33.7	.	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.3
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Indirect Subcategory: PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRADECANE CAS Number=629594 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	2	4	4	10.00	10	0.00	0	.	N/A

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=1-METHYLPHENANTHRENE CAS Number=832699 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	2	31.20	47.3	39.60	133	11.2	N/A

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=PYRENE CAS Number=129000 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	3	14.30	14.3	8.66	8.66	.	N/A

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=BIS(2-ETHYLHEXYL) PHTHALATE CAS Number=117817 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	2	4	4	10.00	10	0.00	0	.	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.3
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Indirect Subcategory: PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=DI-N-OCTYL PHTHALATE CAS Number=117840 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	3	37.50	37.5	55.00	55	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=CADMIUM CAS Number=7440439 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	2	3.56	3.7	1.79	2.37	2.81	N/A

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	4	4.45	4.45	3.70	3.7	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=COPPER CAS Number=7440508 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	1	242.00	584	436.00	5650	15.4	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.3
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Indirect Subcategory: PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=METAL Group=METALS Analyte Name=LEAD CAS Number=7439921 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	4	36.80	36.8	6.80	6.8	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=NICKEL CAS Number=7440020 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	0	276.00	286	290.00	294	5.04	N/A

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	2	4	0	1230.00	1760	1400.00	4430	9.85	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.4
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction= Group= Analyte Name=BOD 5-DAY (CARBONACEOUS) CAS Number=C-002 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	1	4	0	117.00	122	57.80	73.3	3.11	1.55
FAC3	1	4	0	427.00	450	306.00	345.0	3.86	1.72

---------- Fraction= Group= Analyte Name=CHEMICAL OXYGEN DEMAND (COD) CAS Number=C-004 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	1	4	0	233.00	242	111.00	138	2.97	N/A
FAC3	1	4	0	908.00	1200	853.00	2260	8.21	N/A

---------- Fraction= Group= Analyte Name=HEXANE EXTRACTABLE MATERIAL CAS Number=C-036 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	1	4	2	5.09	5.09	0.14	0.142	1.08	1.02
FAC3	1	4	1	13.10	14.80	12.90	18.800	6.11	2.20

---------- Fraction= Group= Analyte Name=SGT-HEM CAS Number=C-037 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	3	7.16	7.16	4.32	4.32	.	N/A
FAC2	3	4	0	12.30	13.00	10.50	11.70	4.45	N/A
FAC3	3	4	1	13.60	14.20	7.83	9.16	3.11	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.4

Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction= Group= Analyte Name=TOTAL ORGANIC CARBON (TOC) CAS Number=C-012 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	1	4	0	77.40	79.2	34.70	36.4	2.51	1.42
FAC3	1	4	0	1000.00	1160.0	1700.00	3830.0	11.30	3.42

---------- Fraction= Group= Analyte Name=TOTAL SUSPENDED SOLIDS CAS Number=C-009 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	0	252.00	255	84.90	86.2	2.04	1.30

---------- Fraction=BASE-NEUTRALS Group=AROMATICS Analyte Name=P-CYMENE CAS Number=99876 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	3	10.80	10.8	1.51	1.51	.	N/A
FAC2	3	4	2	13.50	13.5	4.45	5.24	1.48	N/A
FAC3	3	4	3	56.70	56.7	93.50	93.50	.	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DECANE CAS Number=124185 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	1	4	4	10.00	10.0	0.00	0	.	N/A
FAC3	1	4	3	60.70	60.7	101.00	101	.	N/A
FAC2	3	4	2	133.00	326.0	227.00	2120	15.6	N/A
FAC3	3	4	0	783.00	1710.0	747.00	7100	12.3	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.4
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DOCOSANE CAS Number=629970 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	3	17.90	17.9	15.80	15.8	.	N/A
FAC2	3	4	2	34.90	62.9	48.10	251.0	13.10	N/A
FAC3	3	4	1	61.60	75.2	83.30	150.0	8.75	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	1	4	4	10.00	10	0.00	0	.	N/A
FAC3	1	4	3	188.00	188	356.00	356	.	N/A
FAC2	3	4	1	184.00	269	296.00	927	12.00	N/A
FAC3	3	4	2	888.00	904	1050.00	959	3.32	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-EICOSANE CAS Number=112958 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	3	39.60	39.6	59.20	59.2	.	N/A
FAC2	3	4	1	37.50	47.1	47.40	95.3	8.81	N/A
FAC3	3	4	1	180.00	215.0	251.00	411.0	8.49	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-OCTADECANE CAS Number=593453 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	3	44.20	44.2	68.40	68.40	.	N/A
FAC2	3	4	2	17.30	17.6	6.17	7.56	2.19	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.4
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-OCTADECANE CAS Number=593453 Unit=UG/L ----------
(continued)

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	3	4	0	262.00	389	418.00	1680	12.5	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRACOSANE CAS Number=646311 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	3	13.00	13.0	6.00	6.0	.	N/A
FAC2	3	4	2	34.80	50.1	44.50	126.0	10.50	N/A
FAC3	3	4	1	44.90	52.7	56.40	89.9	7.78	N/A

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-TETRADECANE CAS Number=629594 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	1	4	4	10.00	10.0	0.00	0	.	N/A
FAC3	1	4	3	76.70	76.7	133.00	133	.	N/A
FAC2	3	4	1	232.00	357.0	392.00	1500	13.0	N/A
FAC3	3	4	1	1790.00	3670.0	2860.00	20700	14.2	N/A

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=1-METHYLPHENANTHRENE CAS Number=832699 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	3	17.10	17.1	14.10	14.1	.	N/A
FAC2	3	4	4	12.50	12.5	5.00	5.0	.	N/A
FAC3	3	4	1	35.30	40.0	38.70	54.9	6.5	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.4
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=PYRENE CAS Number=129000 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	4	10.00	10.0	0.00	0.0	.	N/A
FAC2	3	4	4	12.50	12.5	5.00	5.0	.	N/A
FAC3	3	4	3	17.20	17.2	14.40	14.4	.	N/A

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=BIS(2-ETHYLHEXYL) PHTHALATE CAS Number=117817 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC2	1	4	4	10.00	10.0	0.00	0.0	.	N/A
FAC3	1	4	4	10.00	10.0	0.00	0.0	.	N/A
FAC2	3	4	3	52.10	52.1	84.20	84.2	.	N/A
FAC3	3	4	1	34.10	39.7	38.40	60.0	7.06	N/A

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=DI-N-OCTYL PHTHALATE CAS Number=117840 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	3	14.30	14.3	8.63	8.63	.	N/A
FAC2	3	4	4	12.50	12.5	5.00	5.00	.	N/A
FAC3	3	4	2	46.20	83.9	67.50	336.00	13.3	N/A

---------- Fraction=METAL Group=METALS Analyte Name=CADMIUM CAS Number=7440439 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	2	3.28	3.56	1.93	3.06	3.99	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.4
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	2	21.90	34.9	33.20	108	12.1	N/A

---------- Fraction=METAL Group=METALS Analyte Name=COPPER CAS Number=7440508 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	0	40.40	41.6	13.60	18.1	2.42	N/A

---------- Fraction=METAL Group=METALS Analyte Name=LEAD CAS Number=7439921 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	3	36.90	36.9	6.72	6.72	.	N/A

---------- Fraction=METAL Group=METALS Analyte Name=NICKEL CAS Number=7440020 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	0	289.00	293	89.30	93.8	1.97	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.4
Facility-Level Long-term Averages and Variability Factors for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC3	1	4	0	2860.00	2940	1580.00	1580	2.84	N/A

FAC2 contains episodes 4692, 4693, 4694, and 4728.
FAC3 contains episodes 4695, 4696, 4697, and 4727.

Appendix C.5
Facility-Level Long-term Averages and Variability Factors for Truck/Chemical Indirect Subcategory: PSES and PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction= Group= Analyte Name=CHEMICAL OXYGEN DEMAND (COD) CAS Number=C-004 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	0	956.00	281.00

---------- Fraction=BASE-NEUTRALS Group=AROMATICS Analyte Name=STYRENE CAS Number=100425 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	0	45.00	16.50
4677	2	3	3	10.00	0.00

---------- Fraction=BASE-NEUTRALS Group=CHLOROBENZENES II Analyte Name=1,2-DICHLOROBENZENE CAS Number=95501 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	3	10.00	0.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	3	10.00	0.00

Appendix C.5
Facility-Level Long-term Averages and Variability Factors for Truck/Chemical Indirect Subcategory: PSES and PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-HEXADECANE CAS Number=544763 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	3	10.00	0.00
4677	2	3	3	10.00	0.00

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=BIS(2-ETHYLHEXYL) PHTHALATE CAS Number=117817 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	1	20.80	18.10
4677	2	3	3	10.00	0.00

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=DI-N-OCTYL PHTHALATE CAS Number=117840 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	3	10.00	0.00

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	0	19.50	9.63

Appendix C.5
Facility-Level Long-term Averages and Variability Factors for Truck/Chemical Indirect Subcategory: PSES and PSNS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	1	11.40	4.80

Appendix C.6
Facility-Level Long-term Averages and Variability Factors for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction= Group= Analyte Name=BOD 5-DAY (CARBONACEOUS) CAS Number=C-002 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	0	18.10	2.57

---------- Fraction= Group= Analyte Name=CHEMICAL OXYGEN DEMAND (COD) CAS Number=C-004 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	0	98.60	56.90
4677	2	3	0	456.00	9.82

---------- Fraction= Group= Analyte Name=HEXANE EXTRACTABLE MATERIAL CAS Number=C-036 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	2	5.23	0.40
4677	2	3	0	5.43	0.12

---------- Fraction= Group= Analyte Name=TOTAL ORGANIC CARBON (TOC) CAS Number=C-012 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	0	46.70	14.30
4677	2	3	0	414.00	18.80

Appendix C.6

Facility-Level Long-term Averages and Variability Factors for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction= Group= Analyte Name=TOTAL SUSPENDED SOLIDS CAS Number=C-009 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	0	33.70	2.89
4677	2	3	0	19.50	19.90

---------- Fraction=BASE-NEUTRALS Group=AROMATICS Analyte Name=STYRENE CAS Number=100425 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	2	1	10.90	1.25
4677	2	3	1	22.00	10.40

---------- Fraction=BASE-NEUTRALS Group=CHLOROBENZENES II Analyte Name=1,2-DICHLOROBENZENE CAS Number=95501 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	3	10.00	0.00

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-DODECANE CAS Number=112403 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	3	10.00	0.00

Appendix C.6
Facility-Level Long-term Averages and Variability Factors for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=BASE-NEUTRALS Group=N-PARAFFINS Analyte Name=N-HEXADECANE CAS Number=544763 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	3	10.00	0.00
4677	2	3	3	10.00	0.00

---------- Fraction=BASE-NEUTRALS Group=PAHS Analyte Name=NAPHTHALENE CAS Number=91203 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	3	10.00	0.00
4677	2	3	3	10.00	0.00

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=BIS(2-ETHYLHEXYL) PHTHALATE CAS Number=117817 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	3	10.00	0.00
4677	2	3	3	10.00	0.00

---------- Fraction=BASE-NEUTRALS Group=PHTHALATES Analyte Name=DI-N-OCTYL PHTHALATE CAS Number=117840 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	3	10.00	0.00

Appendix C.6

Facility-Level Long-term Averages and Variability Factors for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=METAL Group=METALS Analyte Name=CHROMIUM CAS Number=7440473 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	0	19.50	9.63

---------- Fraction=METAL Group=METALS Analyte Name=ZINC CAS Number=7440666 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	1	11.40	4.80

---------- Fraction=VOLATILE Group=CHLOROMETHANES Analyte Name=METHYLENE CHLORIDE CAS Number=75092 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	0	1690.00	1730.00

---------- Fraction=VOLATILE Group=KETONES, ALIPHATIC I Analyte Name=2-BUTANONE CAS Number=78933 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4676	2	3	3	50.00	0.00
4677	2	3	0	444.00	157.00

Appendix C.6
Facility-Level Long-term Averages and Variability Factors for Truck/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=VOLATILE Group=KETONES, ALIPHATIC II Analyte Name=4-METHYL-2-PENTANONE CAS Number=108101 Unit=UG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Est LTA	Obs Std Dev
4677	2	3	0	161.00	39.40

Appendix C.7
Facility-Level Long-term Averages and Variability Factors for Food Grade Subcategory: BPT, BCT, and NSPS
Assuming Underlying Delta-Lognormal Distribution

---------- Fraction=' ' Group=' ' Analyte Name=BOD 5-DAY (CARBONACEOUS) CAS Number=C-002 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	0	13.00	13.8	9.27	11.1	4.02	1.75

---------- Fraction=' ' Group=' ' Analyte Name=HEXANE EXTRACTABLE MATERIAL CAS Number=C-036 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	1	4	0	170.00	176	147.00	141	4.04	1.76
FAC1	2	4	4	5.00	5	0.00	0	.	.

---------- Fraction=' ' Group=' ' Analyte Name=TOTAL SUSPENDED SOLIDS CAS Number=C-009 Unit=MG/L ----------

Episode	Tech. Option	Tot Num Values	Num ND	Episode Mean	Est LTA	Obs Std Dev	Est Std Dev	1-Day V.F.	4-Day V.F.
FAC1	2	4	0	36.90	41.7	30.90	46.4	5.4	2.05

FAC1 contains episodes 4698, 4699, 4700, and 4729.

Appendix D

Appendix D
Assignment of Pollutants to Groups and Fractions

Fraction	Group	Analyte	CAS Number
N/A	N/A	BOD 5-Day	C-002
N/A	N/A	Chemical Oxygen Demand (COD)	C-004
N/A	N/A	Total Suspended Solids (TSS)	C-009
N/A	N/A	Hexane Extractable Material (HEM)	C-036
N/A	N/A	SGT-HEM	C-037
Base-Neutrals	Aromatics	P-Cymene	99876
Base-Neutrals	Aromatics	Styrene	100425
Base-Neutrals	Chlorobenzenes II	1,2-Dichlorobenzene	95501
Base-Neutrals	N-Paraffins	N-Hexacosane	630013
Base-Neutrals	N-Paraffins	N-Decane	124185
Base-Neutrals	N-Paraffins	N-Decosane	629970
Base-Neutrals	N-Paraffins	N-Dodecane	112403
Base-Neutrals	N-Paraffins	N-Eicosane	112958
Base-Neutrals	N-Paraffins	N-Hexadecane	544763
Base-Neutrals	N-Paraffins	N-Octadecane	593453
Base-Neutrals	N-Paraffins	N-Tetradecane	629594
Base-Neutrals	PAHS	Anthracene	120127
Base-Neutrals	PAHS	Fluoranthene	206440
Base-Neutrals	PAHS	Phenanthrene	85018
Base-Neutrals	PAHS	1-Methylphenanthrene	832699
Base-Neutrals	PAHS	Pyrene	129000
Base-Neutrals	Phthalates	Bis(2-Ethylhexyl) Phthalate	117817
Base-Neutrals	Phthalates	Di-N-Octyl Phthalate	117840
Metal	Metals	Titanium	7440326
Metal	Metals	Cadmium	7440439
Metal	Metals	Chromium	7440473
Metal	Metals	Copper	7440508
Metal	Metals	Lead	7439921
Metal	Metals	Nickel	7440020
Metal	Metals	Barium	7440393
Metal	Metals	Aluminum	7429905
Metal	Metals	Zinc	7440666

Appendix E.1
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Rail/Chemical Indirect Subcategory: PSES and PSNS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
		SGT-HEM	C-037	MG/L	1	41.4	2.88	N/A	119.0	N/A	POL
					3	11.0	2.39	N/A	26.2	N/A	POL
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	UG/L	1	99.1	8.37	N/A	830.0	N/A	OPT3
					3	10.0	8.37	N/A	83.7	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	UG/L	1	38.7	8.37	N/A	324.0	N/A	OPT3
					3	38.7	8.37	N/A	324.0	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	UG/L	1	60.2	8.37	N/A	503.0	N/A	OPT3
					3	10.0	8.37	N/A	83.7	N/A	GRP
BASE-NEUTRALS	PAHS	FLUORANTHENE	206440	UG/L	1	17.3	4.38	N/A	75.7	N/A	GRP
					3	17.3	4.38	N/A	75.7	N/A	GRP
METAL	METALS	ALUMINUM	7429905	UG/L	2	9730.0	4.48	N/A	43600.0	N/A	GRP
METAL	METALS	BARIUM	7440393	UG/L	2	200.0	4.48	N/A	897.0	N/A	GRP
METAL	METALS	CHROMIUM	7440473	UG/L	2	10.0	4.48	N/A	44.8	N/A	GRP
METAL	METALS	COPPER	7440508	UG/L	2	25.0	4.48	N/A	112.0	N/A	GRP
METAL	METALS	TITANIUM	7440326	UG/L	2	5.0	4.48	N/A	22.4	N/A	GRP
METAL	METALS	ZINC	7440666	UG/L	2	21.4	4.48	N/A	95.7	N/A	GRP

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.

Appendix E.2
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
		BOD 5-DAY (CARBONACEOUS)	C-002	MG/L	1	139.00	3.49	1.63	485.0	226.00	BCD
					2	139.00	3.49	1.63	485.0	226.00	BCD
					3	139.00	3.49	1.63	485.0	226.00	BCD
		CHEMICAL OXYGEN DEMAND (COD)	C-004	MG/L	1	898.00	5.93	N/A	5330.0	N/A	POL
					2	898.00	5.93	N/A	5330.0	N/A	POL
					3	898.00	5.93	N/A	5330.0	N/A	POL
		HEXANE EXTRACTABLE MATERIAL	C-036	MG/L	1	26.90	2.21	1.34	59.4	36.10	POL
					2	7.93	2.07	1.32	16.4	10.50	POL
					3	7.93	2.07	1.32	16.4	10.50	POL
		TOTAL SUSPENDED SOLIDS	C-009	MG/L	2	56.40	4.61	1.88	260.0	106.00	POL
					3	9.74	4.38	1.83	42.7	17.80	POL
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	UG/L	1	14.70	5.39	N/A	79.4	N/A	OPT3
					2	10.00	5.39	N/A	53.9	N/A	FR
					3	10.00	5.39	N/A	53.9	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	UG/L	1	10.00	5.39	N/A	53.9	N/A	OPT3
					2	10.00	5.39	N/A	53.9	N/A	FR
					3	10.00	5.39	N/A	53.9	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	UG/L	1	10.00	5.39	N/A	53.9	N/A	OPT3
					2	10.00	5.39	N/A	53.9	N/A	FR
					3	10.00	5.39	N/A	53.9	N/A	FR
BASE-NEUTRALS	PAHS	ANTHRACENE	120127	UG/L	1	51.60	5.39	N/A	278.0	N/A	GRP
					2	51.60	5.39	N/A	278.0	N/A	GRP
					3	51.60	5.39	N/A	278.0	N/A	GRP
BASE-NEUTRALS	PAHS	FLUORANTHENE	206440	UG/L	1	17.30	5.39	N/A	93.0	N/A	GRP
					2	17.30	5.39	N/A	93.0	N/A	GRP
					3	17.30	5.39	N/A	93.0	N/A	GRP

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.
V.F. Type BCD indicates a transfer from Barge/Chemical and Petroleum Direct Option 1

Appendix E.2
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
BASE-NEUTRALS	PAHS	PHENANTHRENE	85018	UG/L	1	45.90	5.39	N/A	247.0	N/A	GRP
					2	45.90	5.39	N/A	247.0	N/A	GRP
					3	45.90	5.39	N/A	247.0	N/A	GRP
BASE-NEUTRALS	PAHS	PYRENE	129000	UG/L	1	15.90	5.39	N/A	85.5	N/A	GRP
					2	15.90	5.39	N/A	85.5	N/A	GRP
					3	15.90	5.39	N/A	85.5	N/A	GRP
METAL	METALS	ALUMINUM	7429905	UG/L	2	9730.00	3.62	N/A	35300.0	N/A	GRP
METAL	METALS	BARIUM	7440393	UG/L	2	116.00	3.62	N/A	420.0	N/A	GRP
METAL	METALS	CHROMIUM	7440473	UG/L	2	10.00	3.62	N/A	36.2	N/A	GRP
METAL	METALS	COPPER	7440508	UG/L	2	8.00	3.62	N/A	29.0	N/A	GRP
METAL	METALS	TITANIUM	7440326	UG/L	2	3.00	3.62	N/A	10.9	N/A	GRP
METAL	METALS	ZINC	7440666	UG/L	2	15.00	3.62	N/A	54.3	N/A	GRP

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.
V.F. Type BCD indicates a transfer from Barge/Chemical and Petroleum Direct Option 1

Appendix E.3
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Barge/Chemical and Petroleum Indirect Subcategory: PSNS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
		SGT-HEM	C-037	MG/L	2	5.00	3.78	N/A	18.9	N/A	OPT4
					4	13.60	3.78	N/A	51.4	N/A	POL
BASE-NEUTRALS	AROMATICS	P-CYMENE	99876	UG/L	2	10.80	11.20	N/A	120.0	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-DECANE	124185	UG/L	2	35.40	11.20	N/A	395.0	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-DOCOSANE	629970	UG/L	2	17.90	11.20	N/A	200.0	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	UG/L	2	98.90	11.20	N/A	1100.0	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-EICOSANE	112958	UG/L	2	39.60	11.20	N/A	442.0	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-OCTADECANE	593453	UG/L	2	44.20	11.20	N/A	493.0	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-TETRACOSANE	646311	UG/L	2	26.80	11.20	N/A	300.0	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	UG/L	2	43.30	11.20	N/A	484.0	N/A	FR
BASE-NEUTRALS	PAHS	1-METHYLPHENANTHRENE	832699	UG/L	2	47.30	11.20	N/A	528.0	N/A	GRP
BASE-NEUTRALS	PAHS	PYRENE	129000	UG/L	2	14.30	11.20	N/A	160.0	N/A	GRP
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	UG/L	2	10.00	11.20	N/A	112.0	N/A	FR
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	UG/L	2	37.50	11.20	N/A	418.0	N/A	FR
METAL	METALS	CADMIUM	7440439	UG/L	2	3.70	7.44	N/A	27.5	N/A	GRP
METAL	METALS	CHROMIUM	7440473	UG/L	2	4.45	7.44	N/A	33.1	N/A	GRP
METAL	METALS	COPPER	7440508	UG/L	2	584.00	7.44	N/A	4350.0	N/A	GRP
METAL	METALS	LEAD	7439921	UG/L	2	36.80	7.44	N/A	274.0	N/A	GRP
METAL	METALS	NICKEL	7440020	UG/L	2	286.00	7.44	N/A	2130.0	N/A	GRP

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.

Appendix E.3
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Barge/Chemical and Petroleum Indirect Subcategory: PSNS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
METAL	METALS	ZINC	7440666	UG/L	2	1760.00	7.44	N/A	13100.0	N/A	GRP

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.

Appendix E.4
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
		BOD 5-DAY (CARBONACEOUS)	C-002	MG/L	1	286.00	3.49	1.63	998.0	468.00	POL
		CHEMICAL OXYGEN DEMAND (COD)	C-004	MG/L	1	722.00	5.59	N/A	4040.0	N/A	POL
		HEXANE EXTRACTABLE MATERIAL	C-036	MG/L	1	9.94	3.60	1.61	35.8	16.00	POL
		TOTAL SUSPENDED SOLIDS	C-009	MG/L	1	255.00	2.04	1.30	519.0	331.00	POL
BASE-NEUTRALS	AROMATICS	P-CYMENE	99876	UG/L	1	10.80	1.48	N/A	15.9	N/A	OPT3
					3	35.10	1.48	N/A	52.0	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-DECANE	124185	UG/L	1	35.40	9.16	N/A	324.0	N/A	OPT3
					3	1020.00	9.16	N/A	9330.0	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-DOCOSANE	629970	UG/L	1	17.90	9.16	N/A	164.0	N/A	OPT3
					3	69.00	9.16	N/A	632.0	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	UG/L	1	98.90	9.16	N/A	906.0	N/A	OPT3
					3	586.00	9.16	N/A	5370.0	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-EICOSANE	112958	UG/L	1	39.60	9.16	N/A	363.0	N/A	OPT3
					3	131.00	9.16	N/A	1200.0	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-OCTADECANE	593453	UG/L	1	44.20	9.16	N/A	405.0	N/A	OPT3
					3	203.00	9.16	N/A	1860.0	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-TETRACOSANE	646311	UG/L	1	13.00	9.16	N/A	119.0	N/A	OPT3
					3	51.40	9.16	N/A	471.0	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	UG/L	1	43.30	9.16	N/A	397.0	N/A	OPT3
					3	2020.00	9.16	N/A	18500.0	N/A	GRP
BASE-NEUTRALS	PAHS	1-METHYLPHENANTHRENE	832699	UG/L	1	17.10	6.50	N/A	111.0	N/A	OPT3
					3	26.30	6.50	N/A	171.0	N/A	GRP
BASE-NEUTRALS	PAHS	PYRENE	129000	UG/L	1	10.00	6.50	N/A	65.0	N/A	OPT3

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.

Appendix E.4
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
BASE-NEUTRALS	PAHS	PYRENE	129000	UG/L	3	14.80	6.50	N/A	96.5	N/A	GRP
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	UG/L	1	10.00	10.20	N/A	102.0	N/A	OPT3
					3	45.90	10.20	N/A	468.0	N/A	GRP
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	UG/L	1	14.30	10.20	N/A	146.0	N/A	OPT3
					3	48.20	10.20	N/A	491.0	N/A	GRP
METAL	METALS	CADMIUM	7440439	UG/L	1	3.56	2.84	N/A	10.1	N/A	GRP
METAL	METALS	CHROMIUM	7440473	UG/L	1	34.90	2.84	N/A	99.0	N/A	GRP
METAL	METALS	COPPER	7440508	UG/L	1	41.60	2.84	N/A	118.0	N/A	GRP
METAL	METALS	LEAD	7439921	UG/L	1	36.90	2.84	N/A	105.0	N/A	GRP
METAL	METALS	NICKEL	7440020	UG/L	1	293.00	2.84	N/A	832.0	N/A	GRP
METAL	METALS	ZINC	7440666	UG/L	1	2940.00	2.84	N/A	8340.0	N/A	GRP

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.

Appendix E.5
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Truck/Chemical Indirect: PSES and PSNS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
		CHEMICAL OXYGEN DEMAND (COD)	C-004	MG/L	2	956.0	.	N/A	.	N/A	
BASE-NEUTRALS	AROMATICS	STYRENE	100425	UG/L	2	27.5	6.38	N/A	175.0	N/A	FR
BASE-NEUTRALS	CHLOROBENZENES II	1,2-DICHLOROBENZENE	95501	UG/L	2	10.0	6.38	N/A	63.8	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	UG/L	2	10.0	8.37	N/A	83.7	N/A	GRP
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	UG/L	2	10.0	8.37	N/A	83.7	N/A	GRP
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	UG/L	2	15.4	6.38	N/A	98.2	N/A	FR
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	UG/L	2	10.0	6.38	N/A	63.8	N/A	FR
METAL	METALS	CHROMIUM	7440473	UG/L	2	19.5	4.48	N/A	87.4	N/A	OPT2
METAL	METALS	ZINC	7440666	UG/L	2	11.4	4.48	N/A	51.1	N/A	OPT2

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.
1-Day and 4-Day V.F. transferred from Option 3 of Rail/Chemical Indirect subcategory, unless indicated otherwise.

Appendix E.6
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Truck/Chemical Direct: BPT, BCT, BAT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
		BOD 5-DAY (CARBONACEOUS)	C-002	MG/L	2	18.10	3.49	1.63	63.2	29.50	BCD
		CHEMICAL OXYGEN DEMAND (COD)	C-004	MG/L	2	277.00	5.93	N/A	1640.0	N/A	POL
		HEXANE EXTRACTABLE MATERIAL	C-036	MG/L	2	5.33	2.07	1.32	11.0	7.04	POL
		TOTAL ORGANIC CARBON (TOC)	C-012	MG/L	2	230.00	3.50	1.64	805.0	377.00	POL
		TOTAL SUSPENDED SOLIDS	C-009	MG/L	2	26.60	4.61	1.88	123.0	50.00	POL
BASE-NEUTRALS	AROMATICS	STYRENE	100425	UG/L	2	16.50	5.39	N/A	88.9	N/A	FR
BASE-NEUTRALS	CHLOROBENZENES II	1,2-DICHLOROBENZENE	95501	UG/L	2	10.00	5.39	N/A	53.9	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	UG/L	2	10.00	5.39	N/A	53.9	N/A	FR
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	UG/L	2	10.00	5.39	N/A	53.9	N/A	FR
BASE-NEUTRALS	PAHS	NAPHTHALENE	91203	UG/L	2	10.00	5.39	N/A	53.9	N/A	GRP
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	UG/L	2	10.00	5.39	N/A	53.9	N/A	FR
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	UG/L	2	10.00	5.39	N/A	53.9	N/A	FR
METAL	METALS	CHROMIUM	7440473	UG/L	2	19.50	3.62	N/A	70.6	N/A	GRP
METAL	METALS	ZINC	7440666	UG/L	2	11.40	3.62	N/A	41.3	N/A	GRP
VOLATILE	CHLOROMETHANES	METHYLENE CHLORIDE	75092	UG/L	2	1690.00	1.10	N/A	1860.0	N/A	FR
VOLATILE	KETONES, ALIPHATIC I	2-BUTANONE	78933	UG/L	2	247.00	1.10	N/A	272.0	N/A	GRP
VOLATILE	KETONES, ALIPHATIC I	4-METHYL-2-PENTANONE	108101	UG/L	2	161.00	1.10	N/A	177.0	N/A	FR

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.
1-Day and 4-Day V.F. transferred from Option 2 of Rail/Chemical Direct subcategory.
V.F. Type BCD indicates V.F. transfer from Barge/Chemical and Petroleum Option 1.

Appendix E.7
Pollutant-Level Long-term Averages, Variability Factors, and Concentration Based Limitations
Food Grade Subcategory: BPT, BCT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Est LTA	1-Day V.F.	4-Day V.F.	1-Day Limit	4-Day Limit	V.F. Type
		BOD 5-DAY (CARBONACEOUS)	C-002	MG/L	2	13.8	4.02	1.75	55.5	24.20	POL
		HEXANE EXTRACTABLE MATERIAL	C-036	MG/L	2	5.0	4.04	1.76	20.2	8.78	OPT1
		TOTAL SUSPENDED SOLIDS	C-009	MG/L	2	41.7	5.40	2.05	225.0	85.60	POL

1-Day and 4-Day Limits are the product of the Pollutant LTA and V.F. Type 1-Day and 4-Day V.F., respectively.
V.F. type OPT1 indicates V.F. transfer from Option 1 Pollutant-level V.F.

Appendix F

Appendix F
Percentile Estimates for Flow per Tank Type Cleaned

Estimated Median Flow per Tank Type Cleaned (gals/tank) by Subcategory and Type of Tanks Cleaned				
Subcategory	**Type of Tanks Cleaned**	**Estimated Percentile Value**	**95% Coverage Interval**	
			Lower Bound	**Upper Bound**
Barge Hopper	Hopper	712	70	10,451
Rail Tank/Chemical	Hopper	1,830	846	3,456
	Rail	2,091	1,032	2,471
Tank Barge/Chemical	Barge	4,857	1,742	9,106
Truck Hopper	Hopper	144	6	748
Tank Truck/Chemical	IBC	123	73	261
	Hopper	842	206	1,011
	Truck	605	494	972
Tank Truck/Food	Truck	790	597	1,097
Tank Truck/Petroleum	Truck	193	193	193

Appendix F (Continued)

Estimated 75th Percentile Flow per Tank Type Cleaned (gals/tank) by Subcategory and Type of Tanks Cleaned				
Subcategory	**Type of Tanks Cleaned**	**Estimated Percentile Value**	**95% Coverage Interval**	
			Lower Bound	**Upper Bound**
Barge Hopper	Hopper	7,970	70	12,932
Rail Tank/Chemical	Hopper	4,360	1,363	6,437
	Rail	3,262	1,398	5,663
Tank Barge/Chemical	Barge	23,798	9,239	30,081
Truck Hopper	Hopper	595	57	938
Tank Truck/Chemical	IBC	260	147	457
	Hopper	977	785	1,260
	Truck	1,211	661	1,910
Tank Truck/Food	Truck	1,343	1,343	1,343
Tank Truck/Petroleum	Truck	340	290	423

Appendix F (Continued)

Estimated 90th Percentile Flow per Tank Type Cleaned (gals/tank) by Subcategory and Type of Tanks Cleaned				
Subcategory	**Type of Tanks Cleaned**	**Estimated Percentile Value**	**95% Coverage Interval**	
			Lower Bound	**Upper Bound**
Barge Hopper	Hopper	12,436	3,523	14,421
Rail Tank/Chemical	Hopper	6,375	3,345	7,192
	Rail	5,571	2,482	6,148
Tank Barge/Chemical	Barge	69,628	52,996	114,730
Truck Hopper	Hopper	906	573	1,032
Tank Truck/Chemical	IBC	307	203	728
	Hopper	1,190	888	1,362
	Truck	1,916	948	3,641
Tank Truck/Food	Truck	10,561	10,561	10,561
Tank Truck/Petroleum	Truck	418	296	439

Appendix F (Continued)

Estimated 95th Percentile Flow per Tank Type Cleaned (gals/tank) by Subcategory and Type of Tanks Cleaned				
Subcategory	**Type of Tanks Cleaned**	**Estimated Percentile Value**	**95% Coverage Interval**	
			Lower Bound	**Upper Bound**
Barge Hopper	Hopper	13,924	5,361	14,917
Rail Tank/Chemical	Hopper	7,154	4,061	7,239
	Rail	5,824	2,581	6,309
Tank Barge/Chemical	Barge	114,730	62,188	138,688
Truck Hopper	Hopper	1,001	684	1,064
Tank Truck/Chemical	IBC	577	257	818
	Hopper	1,320	902	1,396
	Truck	3,171	1,203	3,797
Tank Truck/Food	Truck	13,981	13,981	13,981
Tank Truck/Petroleum	Truck	434	298	445

Estimated 99th Percentile Flow per Tank Type Cleaned (gals/tank) by Subcategory and Type of Tanks Cleaned				
Subcategory	**Type of Tanks Cleaned**	**Estimated Percentile Value**	**95% Coverage Interval**	
			Lower Bound	**Upper Bound**
Barge Hopper	Hopper	15,115	6,832	15,314
Rail Tank/Chemical	Hopper	7,260	4,634	7,277
	Rail	6,342	2,836	6,439
Tank Barge/Chemical	Barge	153,062	69,541	157,854
Truck Hopper	Hopper	1,076	772	1,089
Tank Truck/Chemical	IBC	842	302	890
	Hopper	1,408	1,176	1,423
	Truck	3,797	1,280	3,922
Tank Truck/Food	Truck	16,716	16,716	16,716
Tank Truck/Petroleum	Truck	447	300	449

Appendices G.1 - G.9

Appendix G.1
Pollutant-Level Mass Based Limitations for Rail/Chemical Indirect Subcategory: PSES and PSNS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
		SGT-HEM	C-037	g/tank	1	.0037854	119.0	N/A	2091	942.000	N/A
					3	.0037854	26.2	N/A	2091	207.000	N/A
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	g/tank	1	.0000038	830.0	N/A	2091	6.570	N/A
					3	.0000038	83.7	N/A	2091	0.663	N/A
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	g/tank	1	.0000038	324.0	N/A	2091	2.560	N/A
					3	.0000038	324.0	N/A	2091	2.560	N/A
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	g/tank	1	.0000038	503.0	N/A	2091	3.980	N/A
					3	.0000038	83.7	N/A	2091	0.663	N/A
BASE-NEUTRALS	PAHS	FLUORANTHENE	206440	g/tank	1	.0000038	75.7	N/A	2091	0.599	N/A
					3	.0000038	75.7	N/A	2091	0.599	N/A

Appendix G.2
Pollutant-Level Mass Based Limitations for Rail/Chemical Direct Subcategory: BPT, BCT, BAT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
		BOD 5-DAY (CARBONACEOUS)	C-002	g/tank	1	.0037854	485.0	226.00	2091	3840.00	1790.00
					3	.0037854	485.0	226.00	2091	3840.00	1790.00
		CHEMICAL OXYGEN DEMAND (COD)	C-004	g/tank	1	.0037854	5330.0	N/A	2091	42200.00	N/A
					3	.0037854	5330.0	N/A	2091	42200.00	N/A
		HEXANE EXTRACTABLE MATERIAL	C-036	g/tank	1	.0037854	59.4	36.10	2091	470.00	286.00
					3	.0037854	16.4	10.50	2091	130.00	83.00
		TOTAL SUSPENDED SOLIDS	C-009	g/tank	3	.0037854	42.7	17.80	2091	338.00	141.00
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	g/tank	1	.0000038	79.4	N/A	2091	0.63	N/A
					3	.0000038	53.9	N/A	2091	0.43	N/A
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	g/tank	1	.0000038	53.9	N/A	2091	0.43	N/A
					3	.0000038	53.9	N/A	2091	0.43	N/A
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	g/tank	1	.0000038	53.9	N/A	2091	0.43	N/A
					3	.0000038	53.9	N/A	2091	0.43	N/A
BASE-NEUTRALS	PAHS	ANTHRACENE	120127	g/tank	1	.0000038	278.0	N/A	2091	2.20	N/A
					3	.0000038	278.0	N/A	2091	2.20	N/A
BASE-NEUTRALS	PAHS	FLUORANTHENE	206440	g/tank	1	.0000038	93.0	N/A	2091	0.74	N/A
					3	.0000038	93.0	N/A	2091	0.74	N/A
BASE-NEUTRALS	PAHS	PHENANTHRENE	85018	g/tank	1	.0000038	247.0	N/A	2091	1.96	N/A
					3	.0000038	247.0	N/A	2091	1.96	N/A
BASE-NEUTRALS	PAHS	PYRENE	129000	g/tank	1	.0000038	85.5	N/A	2091	0.68	N/A
					3	.0000038	85.5	N/A	2091	0.68	N/A

Appendix G.3
Pollutant-Level Mass Based Limitations for Barge/Chemical and Petroleum Indirect Subcategory: PSNS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
		SGT-HEM	C-037	g/tank	2	.0037854	18.9	N/A	4857	347.000	N/A
BASE-NEUTRALS	AROMATICS	P-CYMENE	99876	g/tank	2	.0000038	120.0	N/A	4857	2.210	N/A
BASE-NEUTRALS	N-PARAFFINS	N-DECANE	124185	g/tank	2	.0000038	395.0	N/A	4857	7.260	N/A
BASE-NEUTRALS	N-PARAFFINS	N-DOCOSANE	629970	g/tank	2	.0000038	200.0	N/A	4857	3.670	N/A
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	g/tank	2	.0000038	1100.0	N/A	4857	20.300	N/A
BASE-NEUTRALS	N-PARAFFINS	N-EICOSANE	112958	g/tank	2	.0000038	442.0	N/A	4857	8.130	N/A
BASE-NEUTRALS	N-PARAFFINS	N-OCTADECANE	593453	g/tank	2	.0000038	493.0	N/A	4857	9.070	N/A
BASE-NEUTRALS	N-PARAFFINS	N-TETRACOSANE	646311	g/tank	2	.0000038	300.0	N/A	4857	5.510	N/A
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	g/tank	2	.0000038	484.0	N/A	4857	8.900	N/A
BASE-NEUTRALS	PAHS	1-METHYLPHENANTHRENE	832699	g/tank	2	.0000038	528.0	N/A	4857	9.700	N/A
BASE-NEUTRALS	PAHS	PYRENE	129000	g/tank	2	.0000038	160.0	N/A	4857	2.940	N/A
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	g/tank	2	.0000038	112.0	N/A	4857	2.050	N/A
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	g/tank	2	.0000038	418.0	N/A	4857	7.690	N/A
METAL	METALS	CADMIUM	7440439	g/tank	2	.0000038	27.5	N/A	4857	0.506	N/A
METAL	METALS	CHROMIUM	7440473	g/tank	2	.0000038	33.1	N/A	4857	0.609	N/A
METAL	METALS	COPPER	7440508	g/tank	2	.0000038	4350.0	N/A	4857	79.900	N/A

Appendix G.3
Pollutant-Level Mass Based Limitations for Barge/Chemical and Petroleum Indirect Subcategory: PSNS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
METAL	METALS	LEAD	7439921	g/tank	2	.0000038	274.0	N/A	4857	5.040	N/A
METAL	METALS	NICKEL	7440020	g/tank	2	.0000038	2130.0	N/A	4857	39.100	N/A
METAL	METALS	ZINC	7440666	g/tank	2	.0000038	13100.0	N/A	4857	241.000	N/A

Appendix G.4
Pollutant-Level Mass Based Limitations for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
		BOD 5-DAY (CARBONACEOUS)	C-002	g/tank	1	.0037854	998.0	468.00	4857	18300.00	8600.00
		CHEMICAL OXYGEN DEMAND (COD)	C-004	g/tank	1	.0037854	4040.0	N/A	4857	74300.00	N/A
		HEXANE EXTRACTABLE MATERIAL	C-036	g/tank	1	.0037854	35.8	16.00	4857	658.00	294.00
		TOTAL SUSPENDED SOLIDS	C-009	g/tank	1	.0037854	519.0	331.00	4857	9540.00	6090.00
BASE-NEUTRALS	AROMATICS	P-CYMENE	99876	g/tank	1	.0000038	15.9	N/A	4857	0.29	N/A
BASE-NEUTRALS	N-PARAFFINS	N-DECANE	124185	g/tank	1	.0000038	324.0	N/A	4857	5.96	N/A
BASE-NEUTRALS	N-PARAFFINS	N-DOCOSANE	629970	g/tank	1	.0000038	164.0	N/A	4857	3.02	N/A
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	g/tank	1	.0000038	906.0	N/A	4857	16.70	N/A
BASE-NEUTRALS	N-PARAFFINS	N-EICOSANE	112958	g/tank	1	.0000038	363.0	N/A	4857	6.67	N/A
BASE-NEUTRALS	N-PARAFFINS	N-OCTADECANE	593453	g/tank	1	.0000038	405.0	N/A	4857	7.45	N/A
BASE-NEUTRALS	N-PARAFFINS	N-TETRACOSANE	646311	g/tank	1	.0000038	119.0	N/A	4857	2.19	N/A
BASE-NEUTRALS	N-PARAFFINS	N-TETRADECANE	629594	g/tank	1	.0000038	397.0	N/A	4857	7.30	N/A
BASE-NEUTRALS	PAHS	1-METHYLPHENANTHRENE	832699	g/tank	1	.0000038	111.0	N/A	4857	2.04	N/A
BASE-NEUTRALS	PAHS	PYRENE	129000	g/tank	1	.0000038	65.0	N/A	4857	1.20	N/A
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	g/tank	1	.0000038	102.0	N/A	4857	1.88	N/A
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	g/tank	1	.0000038	146.0	N/A	4857	2.68	N/A

Appendix G.4

Pollutant-Level Mass Based Limitations for Barge/Chemical and Petroleum Direct: BPT, BCT, BAT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
METAL	METALS	CADMIUM	7440439	g/tank	1	.0000038	10.1	N/A	4857	0.19	N/A
METAL	METALS	CHROMIUM	7440473	g/tank	1	.0000038	99.0	N/A	4857	1.82	N/A
METAL	METALS	COPPER	7440508	g/tank	1	.0000038	118.0	N/A	4857	2.17	N/A
METAL	METALS	LEAD	7439921	g/tank	1	.0000038	105.0	N/A	4857	1.93	N/A
METAL	METALS	NICKEL	7440020	g/tank	1	.0000038	832.0	N/A	4857	15.30	N/A
METAL	METALS	ZINC	7440666	g/tank	1	.0000038	8340.0	N/A	4857	153.00	N/A

Appendix G.5
Pollutant-Level Mass Based Limitations for Truck/Chemical Indirect: PSES and PSNS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
		CHEMICAL OXYGEN DEMAND (COD)	C-004	g/tank	2	.0037854	.	N/A	605	.	N/A
BASE-NEUTRALS	AROMATICS	STYRENE	100425	g/tank	2	.0000038	175.0	N/A	605	0.402	N/A
BASE-NEUTRALS	CHLOROBENZENES	1,2-DICHLOROBENZENE	95501	g/tank	2	.0000038	63.8	N/A	605	0.146	N/A
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	g/tank	2	.0000038	83.7	N/A	605	0.192	N/A
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	g/tank	2	.0000038	83.7	N/A	605	0.192	N/A
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	g/tank	2	.0000038	98.2	N/A	605	0.225	N/A
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	g/tank	2	.0000038	63.8	N/A	605	0.146	N/A
METAL	METALS	CHROMIUM	7440473	g/tank	2	.0000038	87.4	N/A	605	0.200	N/A
METAL	METALS	ZINC	7440666	g/tank	2	.0000038	51.1	N/A	605	0.117	N/A

Appendix G.6

Pollutant-Level Mass Based Limitations for Truck/Chemical Direct: BPT, BCT, BAT, and NSPS

Fraction	Group	Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
		BOD 5-DAY (CARBONACEOUS)	C-002	g/tank	2	.0037854	63.2	29.50	605	145.00	67.60
		CHEMICAL OXYGEN DEMAND (COD)	C-004	g/tank	2	.0037854	1640.0	N/A	605	3760.00	N/A
		HEXANE EXTRACTABLE MATERIAL	C-036	g/tank	2	.0037854	11.0	7.04	605	25.30	16.10
		TOTAL SUSPENDED SOLIDS	C-009	g/tank	2	.0037854	123.0	50.00	605	281.00	115.00
BASE-NEUTRALS	AROMATICS	STYRENE	100425	g/tank	2	.0000038	88.9	N/A	605	0.20	N/A
BASE-NEUTRALS	CHLOROBENZENES	1,2-DICHLOROBENZENE	95501	g/tank	2	.0000038	53.9	N/A	605	0.12	N/A
BASE-NEUTRALS	N-PARAFFINS	N-DODECANE	112403	g/tank	2	.0000038	53.9	N/A	605	0.12	N/A
BASE-NEUTRALS	N-PARAFFINS	N-HEXADECANE	544763	g/tank	2	.0000038	53.9	N/A	605	0.12	N/A
BASE-NEUTRALS	PHTHALATES	BIS(2-ETHYLHEXYL) PHTHALATE	117817	g/tank	2	.0000038	53.9	N/A	605	0.12	N/A
BASE-NEUTRALS	PHTHALATES	DI-N-OCTYL PHTHALATE	117840	g/tank	2	.0000038	53.9	N/A	605	0.12	N/A
METAL	METALS	CHROMIUM	7440473	g/tank	2	.0000038	70.6	N/A	605	0.16	N/A
METAL	METALS	ZINC	7440666	g/tank	2	.0000038	41.3	N/A	605	0.09	N/A

Appendix G.7
Pollutant-Level Mass Based Limitations for Rail/Food Subcategory: BPT, BCT, and NSPS

Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
BOD 5-DAY (CARBONACEOUS)	C-002	g/tank	2	.0037854	55.5	24.20	4500	945	412.00
HEXANE EXTRACTABLE MATERIAL	C-036	g/tank	2	.0037854	20.2	8.78	4500	344	150.00
TOTAL SUSPENDED SOLIDS	C-009	g/tank	2	.0037854	225.0	85.60	4500	3830	1460.00

Appendix G.8
Pollutant-Level Mass Based Limitations for Truck/Food Subcategory: BPT, BCT, and NSPS

Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
BOD 5-DAY (CARBONACEOUS)	C-002	g/tank	2	.0037854	55.5	24.20	790	166.0	72.40
HEXANE EXTRACTABLE MATERIAL	C-036	g/tank	2	.0037854	20.2	8.78	790	60.4	26.30
TOTAL SUSPENDED SOLIDS	C-009	g/tank	2	.0037854	225.0	85.60	790	673.0	256.00

Appendix G.9
Pollutant-Level Mass Based Limitations for Barge/Food Subcategory: BPT, BCT, and NSPS

Analyte Name	CAS Number	Unit	Tech. Option	Unit Conversion Factor	1-Day Limit	4-Day Limit	Median Flow/Tank	1-Day Flow/Tank	4-Day Flow/Tank
BOD 5-DAY (CARBONACEOUS)	C-002	g/tank	2	.0037854	55.5	24.20	4500	945	412.00
HEXANE EXTRACTABLE MATERIAL	C-036	g/tank	2	.0037854	20.2	8.78	4500	344	150.00
TOTAL SUSPENDED SOLIDS	C-009	g/tank	2	.0037854	225.0	85.60	4500	3830	1460.00